

1044b UIC - EAST POPLAR OIL FIELD
ENFORCEMENT CASE SDWA 1431
Folder ID: 13657 1963 Privileged

Release in Full

~~Encl. 1-1-30~~ ~~Encl. 1-1-30~~
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Region 8



13657

HISTORY

0



PRODUCTION DEPT.
FILE COPY

MURPHY CORPORATION, ET AL.

EAST POPLAR UNIT WELL NO. 12

ROOSEVELT COUNTY, MONTANA

General file copy

MURPHY CORPORATION, ET AL.

EAST POPLAR UNIT WELL NO. 12

C SW SE Section 3, Township 28N, Range 51E
Roosevelt County, Montana

Elevation 2890' K.B.

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DATE	WELL NO.	WELL NAME	WELL TYPE	WELL STATUS	WELL LOCATION
1952	13	13	13	13	13

LOGGING AND CEMENTING RECORD

HISTORY OF OIL OR GAS WELL

It is of the greatest importance to have a complete history of the well. Please state in detail the dates of redrilling, together with the reasons for the work and its results. If there were any changes made in the casing, state fully, and if any casing was "sidetracked" or left in the well, give its size and location. If the well has been dynamited, give date, size, position, and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position, and results of pumping or bailing.

Set 27" casing 15' below RKB with 8 yards Ramix and 14 sacks cement. Spudded 12 1/4" surface hole 10-11-52, and drilled to 1015'. Ran Schlumberger ES; Total Depth 1015 driller- 1019 Schlumberger. Set 9 5/8" of 9 5/8" casing at 973.50' with 400 sacks cement; plug down 3:00 A.M. 10-16-52. Drilled plug from 9 5/8" surface casing, and drilled to 4470. Drilled from 4470 to 5473. Lost drill collars in hole at 5380. Recovered collars on first trip in hole with fishing tool. Strapped pipe out of hole at 5105. Depth Correction: 5105 - 5107 S.L.M. Strapped pipe out at 5470. Depth Correction: 5470 - 5473 S.L.M. Cored "A" zone, 5473-5512. Depth correction: 5512 - 5513 S.L.M. Corrected top of core to 5474. D.S.T. # 1, 5488-5501, Johnston Tool, straddle packers, 1/2" bottom choke, no W.C. Tool open 2 hrs, closed none; opened with weak blow for 2 hours; top packer gave way after 2 hours. Recovered 120' free oil, 30' mud, heavily cut with oil and gas, 30' mud, lightly cut with oil and gas, 90' salt water (chl. 62,000 ppm), 150' clean mud. IBHFP: 0 FBHFP: 50# Hydro: 3050# No shut in pressure. Drilled from 5512 to 5601. Cut Core #2 from 5601-5611. D.S.T. # 2, Tested "B-2" zone from 5632-5644, Johnston Tool, 1/2" bottom choke, no W.C. Tool open 4 hours, closed 20 minutes; weak blow throughout. Recovered 195' clean oil, 90' mud, heavily cut with oil and gas, 150' mud cut with gas, 30' mud cut with water, 270' salt water (chl. 82,000 ppm), IBHFP: 0 FBHFP: 300# BHSIP: 2650# Hydro: 3250#. Tested "B-1" zone from 5615-5626. D.S.T. #3, Johnston Tool, 1/2" bottom choke, no W.C. Tool open 4 hours, closed 20 minutes; opened with weak blow throughout. Recovered 50' free clean oil, 65' mud, heavily cut with oil and gas, 270' mud, cut with oil and water, 90' fluffy mud heavily cut with gas, oil and water, 180' salt water, IBHFP: 0 FBHFP: 75# BHSIP: 2500# Hydro: 3225#. Lost packer rubber in hole. Drilled to 5646. Tested upper part of "B-2", D.S.T. #4, 5630-571, Johnston Tool, straddle packers, 1/2" bottom choke, No W.C. Tool open 4 hours, closed 20 minutes; open with weak blow, decreasing to a very weak blow at end of test. Recovered trace of free oil, 900' mud, slightly cut with oil and gas, 210' mud, heavily cut with gas and slightly cut with oil, 150' salt water (chl. 52,000 ppm) IBHFP: 0 FBHFP: 150# BHSIP: 2800# Hydro: 3250#. Drilled from 5646 to 5740. Cut Core #3, 5740-5775. Depth Correction: 5775 - 5782-6 in. Cut and pulled Core #4, 5782-5792. Cut and pulled Core #5, 5798-5800. D.S.T. #5, 5788-5800, (mis-run), bottom choke, no W.C. Tool open 4:55 A.M. Lost mud before tool was open. Tool open 4 hours, closed 20 minutes. Recovered 1350' clean mud, 490' slightly oil and gas cut mud. No pressures. Found leak in drill pipe after pulling tool out of hole. Ran Schlumberger E.S. and Microlog. Total Depth: 5802; Driller Total Depth: 5800. Ran 778.10' of 5" casing, landed 11' below R.K.B. Cemented with 200 sacks cement and 4 sacks gel. Picked up tubing and drilled plug. Ran LANE WELLS Gamma Ray-Neutron Log from 5400 to 5740, to check depth discrepancy between Schlumberger and Driller. Went back in hole with bit to finish drilling casing plug that was not drilled previously, due to a mistake in tubing measurements. Drilled plug to 5800.

RECEIVED

(See Attached Sheet)

RECEIVED
FUND OFFICE
1952

LOGS 1-52 2 2

761 432

1952-11-10-10
1952-11-10-10

Feb 12

To: District Engineer, U.S. Geological Survey

From: District Engineer, Montana Oil and Gas Commission, Helena, Montana 59601

Subject: Pollution Report

Spill: X Oil Spill, 1/20/76, 1/20/76, 1/20/76

1. Flow line from East Poplar Unit No. 12 to "P" Battery developed a leak

caused by external corrosion.

150' South of "P" Battery Treater next to emergency pit

Due to cold winter weather it was impossible to determine actual amount of resultant damage. Amount of damage appears to be minor.

February 1, 1976 11:00 A.M.

1 Hour

400' of flow line to be replaced with fiberglass

Front end loader used to scrape up all pollutants. Pollutants then dumped in emergency pit.

2" Steel line pipe, used for flow line.

Montana Oil and Gas Commission - Copy of this form

Superintendent

2-10-76

EPU #12

810/10.15

To: District Engineer, U.S. Geological Survey

From: District Superintendent, Murphy Oil Corporation, Poplar, Montana 59255

Subject: Pollution Report

Spill _____ Discharge X Blowout _____ Accident _____ Fire Or
Explosion _____

1. Specific Nature or Cause of Incident

External corrosion of 2" line pipe.

2. Location of Incident

NW SE Section 3, T28N, R51E

3. Description of Resultant Damage and Volume of Pollutant Discharged

1/2 barrel oil and 3 barrels salt water.

Saturated ground in a area about 10' x 10'

4. Date and Time of Occurrence

January 23rd 8:30 A.M.

5. Length of Time Required to Control Incident or Contain Pollutants

Immediately

6. Action Taken to Prevent Recurrence

Replaced steel line pipe with 2" fiberglass pipe.

7. Measures Taken to Clean Up Pollutants

Dug hole and buried contaminated dirt - covered and leveled area

8. The make or manufacturer, size, working and test pressures, date of installation, type of use, physical damage, etc., of any equipment causing or directly involved with the incident.

?

9. Other Federal or State Agencies Notified of Incident

Signature B. J. Mearns

Date January 24, 1980

Title District Superintendent

OK

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

East Poplar Unit F Battery and Wells EPU Nos. 12 & 39

The East Poplar Unit F Battery and the wells producing into the battery, EPU_12 and 39, are onshore production facilities located in Roosevelt County, Montana, in the East Poplar Unit Oil Field. The battery consists of a 4' x 20' vertical separator, a circulating pump with appropriate lines and three 1,000 barrel galvanized bolted tanks. A 2,000 barrel earthen pit is located at the tank battery into which the separator or tanks may be emptied if needed for fluid storage.

The field is about 6 miles Northeast of Poplar, Montana, in Townships 28 and 29 North and Ranges 50 and 51 East.

The operator of the East Poplar Unit F Lease is Murphy Oil Corporation located at P.O. Box 547, Poplar, Montana 59255. The corporation headquarters are at 200 Jefferson Avenue, El Dorado, Arkansas 71730.

The foreman, Mr. Gerald Hagadone, is responsible for oil spill prevention at this facility. On each trip to the lease the pumper makes a visual inspection of all facilities and reports any malfunction to the foreman, Mr. Gerald Hagadone, and notes this malfunction on the ten day gauge report. There has been no reportable oil Spill Event during the twelve months prior to January 10, 1974.

The equipment is in excellent operating condition and there is no reasonable likelihood of a discharge or spill event.

The field flow lines and the well casing of each well are cathodically protected.

Personnel are properly instructed in the operation and maintenance of equipment to prevent oil discharges, and applicable pollution control laws, rules and regulations. Each employee is given these instructions by the field foreman when they are employed. Scheduled prevention briefings for the operating personnel are conducted frequently enough to assure adequate understanding of the SPCC Plan. The procedures are reviewed every six months by the field foreman with each employee. When changes occur in procedures, each employee is informed.

Fluid in the 2,000 barrel storage pit is pumped to the salt water disposal unit if the water is brackish as determined by chloride tests. If only fresh water is contained in the pit it is disposed of by placing on lease roads to control dust and compact the roads. Any oil in the pit is pumped back through the separator with the water being sent to the disposal well. Oil skims are burned by state permits. There are no outlets from the storage pit and all fluids must be pumped out.

The three 1,000 barrel tanks are galvanized and are bolted construction. The tanks are vented to the atmosphere and have unrestricted 4" overflow lines between tanks.

Each of the wells produce with a rod pump. There are 4' x 4' x 2 cellars at each wellhead with overflow lines at earthen pits capable of holding a full days fluid production in case of a leak at the well site.

The tank battery is about ^{1.0} ~~1/2~~ mile from the Poplar River sloping West. The EPU No. 12 is about 1.4 miles from the river and the EPU No. 39 is about 0.4 mile from the river. The soil is sandy and is partly in pasture and partly cultivated. The EPU No.

Use 1st 2 sentences (as changed) & substitute and underline for remainder of IP F.

39 is closest to the river but is located on a hill above a level pasture that occasionally floods in the Spring. However, the water level never reaches the well or its overflow pit. Therefore, The 2,000 barrel pit at the tank battery and the overflow pits at the wells are sufficient secondary containment for these facilities.

The tanks are observed daily by the pumper. Periodically, the foreman checks the entire tank battery and producing wells closely. If any trouble is suspected, the facility is shut down, the tanks and/or separator are emptied and cleaned. The facility is then thoroughly inspected by service company personnel, repairs are made if needed and the unit is placed back into service.

Produced salt water is pumped to a field gathering system for injection into a salt water disposal well. The above ground facilities are observed daily by the pumper and inspected by the foreman closely on his visits to the lease.

All salt water disposal flowlines are cement asbestos lines. These lines are buried and the surface is observed daily by the pumper.

MANAGEMENT APPROVAL

This SPCC Plan will be implemented as herein described.

Signature _____

Name _____

Title _____

CERTIFICATION

I hereby certify that I have examined the facility, and being familiar with the provisions of 40 CFR, Part 112, attest that this SPCC Plan has been prepared in accordance with good engineering practices.

Printed Name Of Registered Professional Engineer

(Seal)

Signature Of Registered Professional Engineer

Date _____

Registration No. _____ State _____

Contingency Plans For An Oil Discharge

East Poplar Unit F Battery and Wells EPU Nos. 12 & 39

The field is visited twice daily by the pumper. Visual inspection is made on each facility on each visit to determine if any malfunction is occurring. The most likely potential oil discharges are checked thoroughly. Periodically, the field foreman, Mr. Gerald Hagadone, will conduct a close check of the entire facility.

The pumpers, Mr. Ferdinand Charette and Mr. Robert Atkinson, have been instructed in the operations and maintenance of equipment to prevent oil and water discharges and informed of the applicable pollution control laws, rules and regulations. If an oil discharge occurs, the pumper will immediately close the proper valves and/or shut down the production facility to stop the discharge. He will then call Mr. Gerald Hagadone who will in turn inform Mr. Brill Brown, District Superintendent. If needed, the proper state and federal agencies will be notified by Mr. Brown. The discharged oil will be reclaimed or disposed of by approved engineering procedures and in accordance to law.

In the event discharged oil collects on standing water such as a stock pond or rain water standing in a low spot, the oil will be pumped into a tank truck. The skim of oil left on the water will be removed by an oil skimmer owned by Murphy Oil Corporation. The skimmer can be towed to the field within an hours time.

If the discharge is in excess of 50 barrels of oil, the Montana Department of Health and Environmental Sciences in Helena will be notified by Mr. Brown.

If a Spill Event occurs as defined by federal law, the Environmental Protection Agency in Denver, Colorado will be notified by Mr. Brown.

Telephone numbers and personnel to be notified in case of an oil discharge are as follows:

Numbers will be listed as shown on other plans

File #12

A.F.E. No. 55-8

AUTHORITY FOR EXPENDITURE

MURPHY CORPORATION - EAST POPLAR UNIT NO. 12 (Installation of Pumping Unit)
C SW SE Sec. 3, Twp. 28N., Rge. 51E., Roosevelt Co. Montana

Pumping Unit, complete w/engine	\$8,200
Labor and materials, setting unit	750
Trucking, small fittings, & incidentals	150
Total Estimated Cost	<u>\$9,100</u>

APPORTIONMENT OF TOTAL ESTIMATED COSTS

	(%)	
Murphy Corporation (Operator)	14.678953	1338
Marine Oil Company	16.772517	1528
Mumoco Company	2.096565	191
Placid Oil Company	33.545035	3053
Carter Oil Company	16.335860	1487
Phillips Petroleum Co.	16.335860	1487
C. V. Lundgren	.236210	21

APPROVAL OF EXPENDITURE

Production Department

Requested by Gordon Kirby ig
Date _____

Approved by [Signature]
Date 7-14-54

Approved

Budget Section

By L.C. Beasley
Date 7-13-54

Executive Department

Approved by _____
Date _____

- * - This A.F.E. includes estimated cost to install permanent unit to replace the portable unit now operating. The skid mounted unit will be moved to East Poplar Unit No. 32.

WJT:BD-1c

7-1-54

170
23
170
37
35
48

File E.P.U. 12

A.F.E. No. 55-455
Workover

AUTHORITY FOR EXPENDITURE
EAST POPLAR UNIT WELL #12 (Workover)
SW SE Section 3-T28N-R51E, Roosevelt County, Montana

Pulling machine, 8 days	\$ 2,400
Cement and pump service	1,360
Water hauling	300
Packers and service	1,625
Total Estimated Cost	\$ 5,685

To locate hole in 5 1/2" casing and squeeze cement to shut off.

APPORTIONMENT OF TOTAL ESTIMATED COST

	%	
Murphy Corporation -		
Unit Operator	31.448470	\$ 1,788
Munoco Company	2.096565	119
Placid Oil Company	33.545035	1,907
Carter Oil Company	16.335860	929
Phillips Petroleum Company	16.335860	929
C. F. Lundgren	.238210	14

APPROVAL OF EXPENDITURE

Requested by:

Recommend Approval:

Harold Milan 6-30-55
Division Production Sup't. Date General Production Sup't. Date

Recommend Approval:

Recommend Approval:

Gordon Kirby 6-30-55
Division Manager Date Budget Supervisor Date

Approved:

Vice President-Operations Date

File #12

M. Y. James
Approved copy

A. F. E. NO. 3-1515

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 12
C SW SE Section 3, T28N, R51E, Roosevelt County, Montana

(Confirming)

JUSTIFICATION:

There was 63 jcs., 1892' of Class #4 tubing in the 2-7/8" tubing string as indicated by Dia-Log Caliper Survey and the cost of pulling tubing and locating tubing leaks had become prohibitive:

ESTIMATED COST

Pulling Unit 29 hrs. at \$30 per hour	\$ 900
Dia-Log tubing	\$ 300
1892' of 2-7/8" EUE 6.50#; 8rd thd. Class 2	
Tubing at \$0.60 per foot	\$1,150
Misc. labor, trucking and material	\$ 300
TOTAL ESTIMATED COST	\$2,650

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.448470%	\$ 833
Munoco Company	2.096565%	\$ 56
Placid Oil Company	33.345035%	\$ 889
Humble Oil & Refining Company	16.335860%	\$ 433
Phillips Petroleum Company	16.335860%	\$ 433
C. F. Lundgren	.238210%	\$ 6

APPROVAL OF EXPENDITURE

Requested By: M. Y. James 6-7-63
M. Y. James Date

Recommend Approval:

L. L. Duncan 6-14-63
L. L. Duncan Date

W. J. Thornton

Date

APPROVED:

H. R. J. Lucey 6-20-63
Manager - P. & E. Date

MTJ/bab
6-7-63

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 12
SW SE Section 3, T28N, R51E, Roosevelt County, Montana
 (Change Rod String)

HISTORY: Rod string - Part of the initial rod string installed January, 1953. The following rod parts have occurred and rods added August, 1965 through October 9, 1966.

Date	Type Part	Size	Depth	Rods Added	Boxes
12-13-65	Box	7/8"	200'	75' 7/8" Cls. #1	3 7/8"
					12 3/4"
1-5-66	Box	7/8"	250'		1 7/8"
3-27-66	Pin	7/8"	100'	25' 7/8" Cls. #1	5 3/4"
5-16-66	Body	7/8"	1150'	25' 7/8" Cls. #1	
5-31-66	Pin	3/4"	3500'	500' 7/8" Cls. #2	
8-10-66	Pin	7/8"	50'	450' 3/4" Cls. #1	1 7/8"
					24 3/4"
10-5-66	Box	3/4"	2850'	Pumping with fishing tool	

PRESENT STATUS: Pumping from the B-1 & 2 Zones 10-2-66. Well Test 160 BFPD 75% Water 40 BOPD 120 BFPD.

RECOMMENDATION: Lay down all 7/8" except 500' Class No. 2 run 5-31-66. Lay down all 3/4" except 450' Class No. 1 run 8-10-66. Run 38% 7/8" Class No. 1 and 62% 3/4" Class No. 1.

ESTIMATED COST

Pulling Unit 16 hrs. at \$33.00 per hr. (stripping job)	\$ 525.00
1600' 7/8" Class No. 1 and 2950' 3/4" Class No. 1	
Sucker Rods	\$ 2,175.00
Tuboscope old rod string at \$2.15 per rod.	\$ 400.00
Less credit for est. 65% of old rod string at 75% of cost.	(\$ 1,100.00)
Misc. trucking and labor handling old rod string	\$ 175.00
Total Estimated Net Cost	\$ 2,175.00

Estimated pay out including lost production 9 rod parts.

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 684.00
Placid Oil Company	33.545035%	\$ 730.00
Humble Oil and Refining Company	16.335860%	\$ 355.00
Drilling Specialties Company	16.335860%	\$ 355.00
Munoco Company	2.096565%	\$ 46.00
C. F. Lundgren	.230210%	\$ 5.00

APPROVAL OF EXPENDITURE

Requested by:

APPROVED:

M. E. James
 M. E. James

10-11-66
 Date

W. J. Thornton

Date

L. L. Duncan

Date

MTJ/sb
 October 10, 1966

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Center at (303) 312-6473.

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST HOLLAR UNIT NO. 12
SW 34 Section 3, T28N, R51E, Roosevelt County, Montana
(Change Tubing String)

PRESENT STATUS: Pumping from the B-1 & 2 Zones comingled. August 9, 1968 Well Test
 125 BWPD 78% Water Cut 27 BWPD 96 BWPD.

Tubing Record

Date	Diameter	Hydro-test	Depth	Est. Cost
9-2-66	Yes	-----	-----	\$ 1,255.00
10-16-67	No	-----	4753'	\$ 525.00
5-20-68	No	-----	4900'	\$ 1,657.00
				\$ 2,647.00

REMARKS: New tubing leak change complete string of tubing. (Pay out including lost production 6.3 tubing leaks.)

ESTIMATED COST

Pulling Unit, 20 hrs. at \$33.00 per hour	\$ 675.00
5550' of 2-7/8" Tubing, Class-No. 1 at \$1.02 per ft.	\$ 5,675.00
Tuboscope Salvaged Tubing at \$3.00 per joint	\$ 550.00
Credit for Estimated 12% Class No. 2 (678') at \$0.77 per ft.	(\$ 525.00)
Credit for Estimated 30% Class No. 3 (1665') at \$0.30 per ft.	(\$ 500.00)
Credit for Estimated 58% Class No. 4 (3207') at \$0.20 per ft.	(\$ 650.00)
Elec. Labor, Trucking and Material	\$ 400.00
Total Estimated Cost	\$ 5,625.00

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 1,769.00
Placid Oil Company	33.545035%	\$ 1,897.00
Humble Oil & Refining Company	16.335850%	\$ 919.00
Drilling Specialties Company	16.335850%	\$ 919.00
Hancock Company	2.096555%	\$ 112.00
G. F. Lundgren	.233210%	\$ 13.00

APPROVAL OF EXPENDITURE

Requested By:

Approved:

M. J. Jones
 M. J. Jones

8-15-68
 Date

W. J. Thornton

Date

MEJ/sb
 August 15, 1968

made

AUTHORITY FOR EXPENDITURE
PHILBY OIL CORPORATION - EAST SUELAR UNIT NO. 12
21 3/4 Section 3, T20N, R51E, Rosebush County, Montana
(Change Tubing String)

PRESENT STATUS: Pumping from the S-1 & 2 Zones coningled. November 2, 1968 Well Head
 128 WPD 79% W.O. 27 BOPD 191 WPD.

Tubing Record

Date	Run-In	Under-Flow	Depth	Exp. Cost
9-3-66	Yes	-----	-----	\$ 1,253.00
10-16-67	No	-----	4780'	\$ 525.00
5-29-68	No	-----	4930'	\$ 1,057.00
				\$ 2,835.00

REMARKS: Next tubing lock change complete string of tubing. (Pay out including lost production 5.1 cubic feet.)

ESTIMATED COST

Pulling Unit, 20 hrs. at \$35.00 per hour.	\$ 675.00
4800' of 2-7/8" tubing, Class No. 1 at \$1.02 per ft.	\$ 4,896.00
1500' of 2-7/8" tubing, Class No. 3 at \$0.30 per ft.	\$ 450.00
Rosebush Calvered Tubing at \$3.00 per joint	\$ 550.00
Gr. 112 New Resincoated LSA Class No. 4 (870') at \$0.77 per ft.	\$ 669.90
Gr. 112 New Resincoated LSA Class No. 3 (1500') at \$0.30 per ft.	\$ 450.00
Gr. 112 New Resincoated LSA Class No. 4 (3207') at \$0.30 per ft.	\$ 962.10
Loss, Union, Knocking and Material	\$ 60.00
Total Estimated Cost	\$ 6,525.00

ANALYSIS OF TOTAL EXPENDITURE

Philby Oil Corporation	31.446470%	\$ 1,481.00
Phila Oil Company	33.545035%	\$ 1,521.00
Phila Oil & Refining Company	16.339065%	\$ 741.00
Pulling Specialties Company	16.339065%	\$ 741.00
Grant Company	2.035558%	\$ 91.25
J. V. Langdon	1.230810%	\$ 54.75

APPROVAL OF EXPENDITURE

Approved by:

APPROVED:

[Signature]

[Signature]

J. S. [Signature]

[Signature]

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 12, 58, & 83
Roosevelt County, Montana

PRESENT STATUS: Wells pumping with no Cathodic protection.

PROPOSAL: Install sufficient anodes to protect casings and flowlines for the life of the wells.

JUSTIFICATION: The Cathodic Protection System that was originally installed in 1964 has deteriorated completely and is giving no protection at all. Additional anodes are needed to protect the well casings and flowlines until depletion date, which is sometime in 1974. We have not had a casing leak with proper protection since May, 1966.

ESTIMATED COST

Anodes installed in 12" x 20' holes C/W 750# Coke Breeze and	
Tied into existing lines	\$ 1,200.00
Misc. Labor, Material and Trucking	\$ 300.00
TOTAL ESTIMATED COST	\$ 1,500.00

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448670%	\$ 472.00
Placid Oil Company	33.545035%	\$ 503.00
Humble Oil and Refining Company	16.335060%	\$ 245.00
Phillips Petroleum Company	16.335860%	\$ 245.00
Manoco Company	2.096565%	\$ 31.00
C. F. Lundgren	.238210%	\$ 4.00

APPROVAL OF EXPENDITURE

Requested by:

APPROVED:

H. T. Jones
H. T. Jones

9-19-69
Date

W. J. Thornton
Date

Date

MTJ/ab
September 19, 1969

mail to m.t. James

File

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NOS. 12, 58, & 83
ROOSEVELT COUNTY, MONTANA

PRESENT STATUS: Wells pumping with no Cathodic protection.

PROPOSAL: Install sufficient anodes to protect casings and flowlines for the life of the wells.

JUSTIFICATION: The Cathodic Protection System that was originally installed in 1964 has deteriorated completely and is giving no protection at all. Additional anodes are needed to protect the well casings and flowlines until depletion date, which is sometime in 1974. We have not had a casing leak with proper protection since May, 1966.

ESTIMATED COSTS

Anodes installed in 12" X 20' holes complete with 750# Coke Breeze and Tied into existing lines	\$ 1,200
Miscellaneous Labor, Material and Trucking	300
TOTAL ESTIMATED COSTS	\$ 1,500

APPORTIONMENT OF TOTAL ESTIMATED COSTS

Murphy Oil Corporation	31.448470%	\$ 471
Placid Oil Company	33.545035%	503
Humble Oil & Refining Company	16.335860%	245
Phillips Petroleum Company	16.335860%	245
Munoco Company	2.096565%	31
C. F. Lundgren	.238210%	4

APPROVAL OF EXPENDITURE

Requested By:

APPROVED:

M. T. James 9-19-69
Date

W. J. Thornton 9-25-69
Date

MTJ/sb/bka
9-25-69

File

2/10/70 M.T. James

WOMAN JAN 12 1970

-A.F.E. No. 70-1500 -10

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 12
SW SE Section 3, T28N, R51E, Roosevelt County, Montana
(Change Tubing String)

PRESENT STATUS: Pumping from the B-1 & 2 Zones comingled. December 11, 1969 Well Test 26 BOPD 104 BWPD.

Tubing Record

Date	Type Leak	Hydro-Test	Depth	Est. Cost
5-29-68	Rod Cut	Yes	4900'	\$ 1,015
3-21-69	Crack Body	Yes	2418'	\$ 953
6-19-69	Crack Body	Yes	4650'	\$ 889
10-2-69	Crack Body	No	4809'	\$ 1,025
12-31-69	Crack Body	Yes	1884'	\$ 1,688
				\$ 5,570

PROPOSAL: Next tubing leak change 4050' off bottom of tubing. Stand top 1500' in derrick and run on top of tubing string. (Pay out including lost production 3.4 tubing jobs.)

ESTIMATED COST

Pulling Unit 18 Hrs. at \$37.00 per hr.	\$ 675.00
4050' of 2-7/8" tubing Class No. 1 at \$1.02 per foot	\$ 4,131.00
Tuboscope salvaged tubing at \$3.10 per joints	\$ 548.70
Credit for estimated 20% Class No. 2 (1110') at \$0.77 per foot	(\$ 854.70)
Credit for estimated 30% Class No. 3 (1665') at \$0.26½ per foot	(\$ 441.23)
Credit for estimated 50% Class No. 4 (2775') at \$0.20 per foot	(\$ 550.00)
Misc. Labor Trucking and Material	\$ 400.00
TOTAL ESTIMATED COST	\$ 3,903.77

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 1,227.68
Placid Oil Company	33.545035%	\$ 1,309.52
Humble Oil and Refining Company	16.335860%	\$ 637.71
Phillips Petroleum Company	16.335860%	\$ 637.71
Munoco Company	2.096565%	\$ 81.85
C. F. Lundgren	.238210%	\$ 9.30

APPROVAL OF EXPENDITURE

Requested by: _____ APPROVED: _____
M. T. James _____ W. J. Thornton _____
Date 1-8-70 Date 1-12-70

MTJ/sb
January 8, 1970

Complete Jan. 1970

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 12
SW SE Section 3, T28N, R51E, Roosevelt County, Montana
 (Change Rod String)

Proposal and Justification: It is proposed to change the rod string, except for the 5/8" rods, with Condition 2 tuboscoped rods.

East Poplar Unit No. 12 has had 5 rod parts since March, 1972, the total cost of these breaks being \$2,405. The parts have not been concentrated in either the 3/4" or 7/8" rods. This well is producing at the rate of 135 BFPD 30 BOPD 105 BWPD 78% BS&W from the B-1 & 2 Zone. Payout would be 5 rod parts or 9 months with down time and lost production at a minimum.

ESTIMATED COST

Pulling Unit, 10 hrs. at \$40.00	\$ 400
2000' of 7/8" Condition 2 Rods	925
3400' of 3/4" Condition 2 Rods	1,100
Credit for 216 Rods	(300)
Labor to haul rods	150
Misc. Labor, Material and Trucking	150
Total Estimated Cost	\$ 2,425

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 763
Placid Oil Company	33.545035%	813
Humble Oil & Refining Company	16.335860%	396
Phillips Petroleum Company	16.335860%	396
Munoco Company	2.096565%	51
C. F. Lundgren	.238210%	6

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

 W. G. Brown

Date

A. W. Simpson
 A. W. Simpson

Date

1-16-73

This job went as planned with no problems. We were under A.D.E.'d cost because the hauling of rods was done quicker than anticipated and no misc. expenses.

Date Job Completed 2/5/72

Approximate Cost \$2, 298

WGB/sb

January 12, 1973

By Gerald Hagadone

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 12
SW SE Section 3, T28N, R51E, Roosevelt County, Montana
(Acidize The B-1 & 2 Zones)

PROPOSAL & JUSTIFICATION: It is proposed to acidize the B-1 & 2 perforations (5614-22' and 5632-40') with 750 gallons of 15% HCL, 10% U-66 solvent, inhibitor and iron sequestering agent added.

This well was originally completed (December, 1952) in the B-1, B-2, and C-Zone with all zones acidized at that time. In June, 1955 the C-Zone was blanked off and a casing leak repaired at 3840' leaving the B-1 & 2 Zones producing. In October, 1964 another casing leak occurred at 3855' and was repaired. The B-Zones still producing without stimulation. September, 1964, before 2nd. casing leak, test show 190 BFPD 59 BOPD 131 BWPD 69% BS&W while the October test, after casing leak was repaired, shows 130 BFPD 32 BOPD 98 BWPD 75% BS&W. Last quarter test indicates 131 BFPD 27 BOPD 104 BWPD 79% BS&W which should be able to be raised to the 190 BFPD test. An increase of 13 BOPD is anticipated giving a payout of 50 days assuming \$5.00 per bbl..

ESTIMATED COST

Pulling Unit	\$ 1,000
Packer Repair	\$ 400
Hydrotest	\$ 450
Acid and Services	\$ 1,100
Misc. Labor, Material and Trucking	\$ 250
Total Estimated Cost	\$ 3,200

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 1,006
Placid Oil Company	33.545035%	\$ 1,073
Exxon Company, U.S.A.	16.335860%	\$ 523
Phillips Petroleum Company	16.335860%	\$ 523
Munoco Company	2.096565%	\$ 67
C. F. Lundgren	.238210%	\$ 8

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

W. G. Brown
W. G. Brown

1-29-74 A. W. Simpson 2/6/74
Date A. W. Simpson Date

WGB/sb
January 28, 1974

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 12
SW SE Section 3, T28N, R51E, Roosevelt County, Montana
 (Acidize The B-1 & 2 Zones)

PROPOSAL & JUSTIFICATION: It is proposed to acidize the B-1 & 2 perforations (5614-22' and 5632-40') with 750 gallons of 15% HCL, 10% U-66 solvent, inhibitor and iron sequestering agent added.

This well was originally completed (December, 1952) in the B-1, B-2, and C-Zone with all zones acidized at that time. In June, 1955 the C-Zone was blanked off and a casing leak repaired at 3840' leaving the B-1 & 2 Zones producing. In October, 1964 another casing leak occurred at 3855' and was repaired. The B-Zones still producing without stimulation. September, 1964, before 2nd. casing leak, test show 190 BFPD 59 BOPD 131 BWPD 69% BS&W while the October test, after casing leak was repaired, shows 130 BFPD 32 BOPD 98 BWPD 75% BS&W. Last quarter test indicates 131 BFPD 27 BOPD 104 BWPD 79% BS&W which should be able to be raised to the 190 BFPD test. An increase of 13 BOPD is anticipated giving a payout of 50 days assuming \$5.00 per bbl..

ESTIMATED COST

Pulling Unit	\$ 1,000
Packer Repair	\$ 400
Hydrotest	\$ 450
Acid and Services	\$ 1,100
Misc. Labor, Material and Trucking	\$ 250
Total Estimated Cost	\$ 3,200

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 1,006
Placid Oil Company	33.545035%	\$ 1,073
Exxon Company, U.S.A.	16.335860%	\$ 523
Phillips Petroleum Company	16.335860%	\$ 523
Munoco Company	2.096565%	\$ 67
C. F. Lundgren	.238210%	\$ 8

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

W. C. Brown

Date

A. W. Simpson

Date

NO. 2200 FEB 12 1976

A.P.E. No. 6-1501-10

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 12
SW SE Section 3, T28N, R51E, Roosevelt County, Montana
(Replace Section Of Flow Line)

It is proposed to replace 400' of 2" steel flow line used for East Poplar Unit No. 12 with 2" fiberglass pipe.

Numerous leaks have occurred in the flow line from East Poplar Unit No. 12 to "F" Battery. The majority of leaks have been concentrated in the section of line nearest "F" Battery. These leaks have been caused by external corrosion. This problem would be taken care of by using fiberglass pipe to replace the bad section of line.

ESTIMATED COST

2" A.O. Smith Fiberglass Pipe with Crossover Fittings, Glue Kits	\$ 462
Routabout Labor, Backhoe, Etc.	\$ 800
Supervision	\$ 125
Total Estimated Cost	\$ 1,387

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 436
Placid Oil Company	33.545035%	\$ 465
Exxon Company, U.S.A.	16.335860%	\$ 227
Phillips Petroleum Company	16.335860%	\$ 227
Munoco Company	2.096565%	\$ 29
C. F. Lundgren	.238210%	\$ 3

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

Billy G. Melear
 Billy G. Melear

2/15/76
 Date

A. W. Simpson
 A. W. Simpson

2/12/76
 Date

1523

TCH/sb
 February 5, 1976

MURPHY OIL CORPORATION
 AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 12
 SW SE SECTION 3, T28N-R51E - ROOSEVELT COUNTY, MONTANA

PERFORATE ADDITIONAL SECTION & INSTALL REDA PUMP

PROPOSAL & JUSTIFICATION

This well is now producing from the "B-1" & "2" Zones at 22 BOPD and 137 BWP. The "C" Zone is blanked off with a Baker Model "K" bridge plug at 5754'.

It is proposed to set a packer below the "B-2" Zone, perforate the "B-4" Zone (5693-5698') together with the "B-3" Zone (5655-5660') and test. Then, isolate all "B" Zones and perforate and test the "A-4" Zone (5501-5503').

These Zones, commingled with the presently open "B-1" & "2" are expected to yield total fluid production volumes which will be excessive for the beam pumping unit (228,000 in. - lb.) now on the well. It is proposed that the low volume test Reda (Type D20E, 94 Stage powered with a 70 HP Motor) formerly in use in EPU #58 be moved to this well.

Expected daily production is 650 BFPD, 590 BWP and 60 BOPD. This would give us an increase of 38 BOPD. An increase in production of 38 BOPD would pay out in approximately 3 1/2 months and yield an increased rate of return in excess of 50%. This well is in a competitive area and any increase would effectively represent a net gain in recovery.

ESTIMATED COST

Packer Services -----	\$ 1,350
Perforating Services -----	3,500
Acid Services and Truck -----	3,800
Rig Time (Workover, Swabbing and Run Reda) -----	4,680
Reda Serviceman -----	1,000
Roustabout Labor to Run Reda -----	380
Supervision -----	600
Reda Pump -----	13,000
Credit for Lufkin Pumping Unit and 30 H.P. Electric Motor--	(5,000)
Credit for 7/8" and 3/4" Rods (5500') -----	(3,025)
TOTAL ESTIMATED COST -----	\$ 20,285

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 6,379
Placid Oil Company	33.545035%	6,805
Exxon Company, U.S.A.	16.335860%	3,314
Phillips Petroleum Company	16.335860%	3,314
Munoco Company	2.096565%	425
C. F. Lundgren	.238210%	48


APPROVAL OF EXPENDITURE

Requested:

APPROVED:

BILLY G. MELEAR

3/25/76
Date

 3/26/76
Date

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 12
SW SE Section 3, T28N, R51E, Roosevelt County, Montana
 (Supplement No. 1 - Run Reda Pump)

Supplement No. 1 is to cover the added estimated expense on running a high volume lift pump in this well. A tubing anchor had previously been left in the hole and had to be fished before work could proceed on well. Also a 10,000 gallon acid job plus two other acid jobs were done on this well. The larger acid job was not anticipated when the A.F.E. was prepared. These two things helped to contribute to raising the rig costs. Additional rig time also resulted from added swabbing time.

ESTIMATED COST

	Original Estimate	Revised Estimate	Supplement No. 1
Packer Services	\$ 1,350	\$ 2,765	\$ 1,415
Perforating Services	\$ 3,500	\$ 2,935	(\$ 565)
Acid Service and Truck	\$ 3,800	\$15,565	\$11,765
Workover Rig	\$ 4,680	\$17,555	\$12,875
Reda Serviceman	\$ 1,000	\$ 1,000	\$-----
Reda Pump	\$13,000	\$13,000	\$-----
Roustabout Labor	\$ 380	\$ 615	\$ 235
Misc. Material, Supervision and Trucking	\$ 600	\$ 1,485	\$ 885
Fishing Tools	\$-----	\$ 2,985	\$ 2,085
Credit For Pumping Unit	(\$ 5,000)	(\$ 5,000)	\$-----
Credit For Rods	(\$ 3,025)	(\$ 3,025)	\$-----
TOTAL ESTIMATED COST	\$20,285	\$48,980	\$28,695

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 6,379	\$15,404	\$ 9,025
Placid Oil Company	33.545035%	\$ 6,805	\$16,430	\$ 9,625
Exxon Company, U.S.A.	16.335860%	\$ 3,314	\$ 8,001	\$ 4,687
Phillips Petroleum Company	16.335860%	\$ 3,314	\$ 8,001	\$ 4,687
Munoco Company	2.096565%	\$ 425	\$ 1,027	\$ 602
C. F. Lundgren	.238210%	\$ 48	\$ 117	\$ 69

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

Billy O. Melear
 Billy O. Melear

7-28-76
 Date

A. W. Simpson
 A. W. Simpson

8/2/76
 Date

W. B. Miller
 W. B. Miller
 8/2/76
 Date

REF. PROD. FEB 7 1980

A.P.E. No. 0-1501-10

MURPHY OIL CORPORATION
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 12
SW SE Section 3, T28N, R51E, Roosevelt County, Montana

It is proposed to replace 1300' of 2" flowline starting 625' South of "F" Battery and laying South to East Poplar Unit No. 12. This section of flowline has experienced numerous leaks during the past few months.

ESTIMATED COST

1300' of 2" Fiberglass, Silver Thread and Glue Kits	\$ 1,800
Labor to Lay and Ditch	\$ 2,145
Supervision and Misc.	\$ 200
Total Estimated Cost	\$ 4,145

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 1,304
Placid Oil Company	33.545035%	\$ 1,390
Exxon Company, U.S.A.	16.335860%	\$ 677
Phillips Petroleum Company	16.335860%	\$ 677
Munoco Company	2.096565%	\$ 87
C. F. Lundgren	.238210%	\$ 10

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

Billy W. Melear
 Billy W. Melear

2-13-80
 Date

A. W. Simpson
 A. W. Simpson

2/11/80
 Date

Appropriate cost
\$ 3922

BGM/sb
 February 4, 1980

(Soc)

MURPHY OIL CORPORATION
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 12
SW SE Section 3, T28N, R51E, Roosevelt County, Montana

It is proposed to replace 1300' of 2" flowline starting 625' South of "F" Battery and laying South to East Poplar Unit No. 12. This section of flowline has experienced numerous leaks during the past few months.

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1300' of 2" Fiberglass, Silver Thread and Glue Kits	\$ 1,800
Labor to Lay and Ditch	\$ 2,145
Supervision and Misc.	\$ 200
Total Estimated Cost	\$ 4,145

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 1,304
Placid Oil Company	33.545035%	\$ 1,390
Exxon Company, U.S.A.	16.335860%	\$ 677
Phillips Petroleum Company	16.335860%	\$ 677
Munoco Company	2.096565%	\$ 87
C. F. Lundgren	.238210%	\$ 10

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

Billy O. Melear
 Billy O. Melear

2-13-80
 Date

A. W. Simpson

Date

AUTHORITY FOR EXPENDITUREMURPHY CORPORATION - EAST POPLAR UNIT #12Center SW of SE of Sec. 3, Twp. 28 N., Rge. 51 E., Roosevelt Co., Montana

<u>WELL DRILLING & CONSTRUCTION EXPENSE</u>	<u>TO CSG. FT.</u>	<u>COMP. & EQUIP.</u>	<u>TOTAL COST</u>
Drilling: Footage - 5800' @ \$8/ft.	\$ 45,400	\$	\$ 46,400
Day Work - 5 days @ \$925/day		4,625	4,625
Loc. survey, permit & prep.	200		200
Roads, fences, cattleguards, etc.	250		250
Mud mat. & chem., incl. oil	5,200		5,200
Fuel	5,500		5,500
Water	250		250
Drilling bits, baskets, etc.		200	200
Cementing casing	900	950	1,850
Coring materials & services	3,500		3,500
Testing services, incl. swabbing	1,800	300	2,100
Perforating services		650	650
Other logs, surveys & analyses	1,400	650	2,050
Hydrafrac, acidize, etc. incl. oil		750	750
Float equip., centralizers, etc.	125	250	375
Tubular inspection, testing, etc.		1,200	1,200
Trucking, welding & other labor	500	600	1,100
Supervision & Miscellaneous	1,800	1,200	3,000
Total est. well drilling & const. expense	67,825	11,375	79,200
<u>WELL EQUIPMENT COST</u>			
Casing: 1000' of 9-5/8" O.D. @ \$3.30/ft.	3,300		3,300
Casing: 6000' of 5-1/2" O.D. @ \$1.75/ft.		10,500	10,500
Tubing: 6000' of 2-3/8" O.D. @ \$0.55/ft.		3,300	3,300
Packers, etc.		650	650
Casing head & connections	300		300
Xmas tree & connections		1,200	1,200
Total est. well equip. cost	3,600	15,650	19,250
Total Est. Cost of Well	71,425	27,025	98,450
<u>LEASE EQUIPMENT</u>			
Tanks, erected		6,000	6,000
Heater-treaters		6,400	6,400
Flow lines		800	800
Other line pipe, valves & fittings		750	750
Trucking, welding & other labor		800	800
Miscellaneous		700	700
Total Est. Cost of Lease Equip.		15,450	15,450
Total Est. Cost of Well & Lease Equip.	\$ 71,425	\$ 42,475	\$113,900

APPORTIONMENT OF TOTAL ESTIMATED COSTSAPPROVAL OF EXPENDITUREProduction DepartmentApprovedRequested by _____
Date _____Approved by _____
Date _____ V.P.

By _____

Executive Department

Date _____

Approved by _____
Date _____ Pres.

Epu #12
Permit App

13 pages
152 → 750

COPY

U. S. DEPT. OF THE INTERIOR - GEOLOGICAL SURVEY

BOARD OF RAILROAD COMMISSIONERS OF THE STATE OF MONTANA

OIL AND GAS WELL DIVISION

Board of Railroad

BEST COPY
AVAILABLE

OCT 1952

BLM-A 029305-A

East Poplar Unit

SUNDRY NOTICES AND REPORT OF WELLS

(Indicate Nature of Data by Checking)

Notice of intention to drill	X	Subsequent record of shooting	
Notice of intention to change plans		Record of perforating casing	
Notice of date for test of water shut-off		Notice of intention to pull or otherwise alter casing	
Report on result of test of water shut-off		Notice of intention to abandon well	
Notice of intention to redrill or repair well		Subsequent report of abandonment	
Notice of intention to shoot		Supplementary well history	

October 7

1952

Following is a { notice of intention to do work } on land { owned }
{ report of work done } { leased } described as follows:MONTANA
(State)Roosevelt
(County)East Poplar
(Field)Well No. 12 C SW SE 3 23 N 51 E
(m.sec.) (Township) (Range Meridian)

The well is located 660 ft. { Sx } of South line and 1980 ft. { W } of East line of Sec. 3

The elevation of the derrick floor above the sea level is.....

DETAILS OF PLAN OF WORK

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work.)

13 3/8" conductor casing will be set at approx. 40' and cemented w/50 sx.
 9 5/8" surface casing will be set at approx. 950' and cemented with 400 sx.
 Total depth is expected to be 5850' so as to test the "B" and "C" zones of the
 Madison formation. 5 1/2" casing will be set above the "C" zone.

- No well is to be spudded in unless a \$5,000.00 surety drilling bond has been posted and approved by the Board of Railroad Commissioners.
- Cable tool operators must construct an adequate pump to contain all mud and water bailed from the hole.
- Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered; unless special permission has been granted for formation shut-off.
- Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, re-drill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by Supervisor prior to commencement of work.
- All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement as drilling progresses.
- The production string must be cemented unless a formation shut-off or packer is approved by the Supervisor. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
- All production strings of casing must be tested by balling or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.

- A satisfactory drilling record must be kept for each foot showing top and thickness of each and all formations drilled and all other information of value. One copy of which is to be kept in the rig while drilling is in progress for examination when a supervisor visits the well.

Approved: 10-10-52
 s/ H. H. Perriso
 District Engineer

Company: Murphy Corporation
 By: Harold L. ...
 Address: Box 76, Poplar, Montana

NOTE:—Reports on this form to be submitted to the Supervisor for approval, and amended as required in "Operating Regulations," and amended as required in "Operating Regulations," and amended as required in "Operating Regulations."

GENERAL RULES

201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)

TO

NOTICE!

THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE COMMISSION.OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

RECEIVED

MAR 21 1956

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	X
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

March 14, 1956

Following is a ~~report of work done~~ on land ~~owned~~ leased described as follows:

LEASE BIM-A 029305A

MONTANA
(State)Roosevelt
(County)East Poplar
(Field)Well No. 12 SH SE Section 3 28N 51E M.P.M.
(m. sec.) (Township) (Range) (Meridian)The well is located 660 ft. from ~~XX~~ S Southline and 1980 ft. from ~~XX~~ E East line of Sec. 3

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2089' K.B.

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

See attached sheets for workover performed during June, 1955.

Approved subject to conditions on reverse of form

Company MURPHY CORPORATION

Date 4/18/56

By Harold Milan

By John R. Hays
District Office Agent

Title Division Production Superintendent

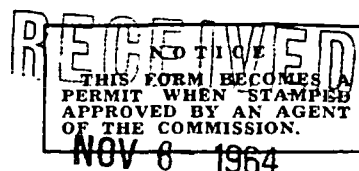
Address 602 Midland Bank Bldg, Billings, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of XXXXXX Repair (Csg.)	XX
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

November 4, 1964

Following is a ~~XXXXXX~~ report of work done on land ~~XXXXXX~~ leased described as follows:

LEASE East Poplar Unit No. 12

MONTANA
(State)Roosevelt
(County)East Poplar
(Field)Well No. EPU No. 12 SW SE Section 3 28N 51E MPM
(m. sec.) (Township) (Range) (Meridian)The well is located 660 ft. from ~~XX~~ S line and 1980 ft. from ~~XX~~ E line of Sec. 3

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is.....

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

RECEIVED

NOV 5 - 1964

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

See Attached Sheets

Approved subject to conditions on reverse of form

Date Nov. 5, 1964

By Bill B. Lane, Title

District Office Agent

Company MURPHY OIL CORPORATION

By M. J. Jones

Title Field Production Superintendent

Address P.O. Box 547 Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

OVER



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEYSUBMIT IN THE INDICATED
(Other instructions on reverse side)Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.

BLM-A 029305-A

EPU No. 12

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

EAST POPLAR

8. FARM OR LEASE NAME

9. WELL NO.

EPU No. 12

10. FIELD AND TOOL, OR WILDCAT

11. SECTION, TOWNSHIP, RANGE, AND
SURVEY OR AREA

SW SE Section 3,

T20N R51E

12. COUNTY OR PARISH 13. STATE

Roosevelt

Montana

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)1. OIL WELL ☒ GAS WELL ☐ OTHER ☐

2. NAME OF OPERATOR

3. ADDRESS OF OPERATOR
MURPHY OIL CORPORATION4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*
See also space 17 below.)
At surface

6.60 FSL-1980' FEL-dec. 3

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)

16.

Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other)

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON*

CHANGE PLANS

SUBSEQUENT REPORT OF:

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

(Note: Report results of multiple completion on Well
Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

U. S. GEOLOGICAL SURVEY
RECEIVED

NOV 5 1964

See Attached Sheets

18. I hereby certify that the foregoing is true and correct

SIGNED

TITLE

Field Production Superintendent

DATE

November 4, 1964

(This space for Federal or State office use)

D. JAMES

APPROVED BY

TITLE

DISTRICT ENGINEER

DATE

NOV 5 1964

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

(SUBMIT IN QUADRUPPLICATE
TOOIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS

NOTICE

THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE COMMISSION.

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement	XX	Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

February 14, 1974

Following is a notice of intention to do work on land ~~XXXXXX~~ leased described as follows:

LEASE East Poplar Unit No. 12

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 12 SW SE Section 3 T28N R51E

(m. sec.) (Township) (Range) (Meridian)

The well is located 660 ft. from ~~XXX~~ S line and 1980 ft. from ~~XXX~~ E line of Sec. 3

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is 2078' G.L.

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

It is proposed to acidize the B-1 & 2 perforations, 5614-22' and 5632-40', with 750 gallons of 15% HCL, 10% U-66 solvent, inhibitor and iron sequestering agent added. A casing leak occurred in this well in 1964. After the leak was repaired the fluid recovered from this well dropped from 190 BFPD to 130 BFPD. By acidizing the perforations the total fluid should be increased to what it was before the leak.

Approved subject to conditions on reverse of form

Date Feb. 15, 1974

By *Judson A. Sweet* District Office Agent Title P.E.

Company MURPHY OIL CORPORATION

By *W. G. Brown*

Title District Superintendent

Address P.O. Box 547, Poplar, Montana 59255

COMMISSION USE ONLY
API WELL NUMBER

2	5								
STATE	COUNTY	WELL							

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEYSUBMIT IN TRIPLICATE*
(Other instructions on re-
verse side)Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.

RLM-A-029305-A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

Fort Peck

7. UNIT AGREEMENT NAME

East Poplar

8. FARM OR LEASE NAME

East Poplar Unit

9. WELL NO.

No. 12

10. FIELD AND POOL, OR WILDCAT

East Poplar Unit

11. SEC., T., R., M., OR BLK. AND
SURVEY OR AREA

SW SE Section 3,

T28N, R51E

12. COUNTY OR PARISH

Roosevelt

Montana

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input type="checkbox"/>	U. S. Geological Survey RECEIVED
2. NAME OF OPERATOR Murphy Oil Corporation	FEB 19 1974
3. ADDRESS OF OPERATOR P.O. Box 547, Poplar, Montana 59255	Billings, Montana
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.) At surface	CSW SE

660' from the South line and 1980' from the East line Section 3

14. PERMIT NO. 15. ELEVATIONS (Show whether DF, RT, GR, etc.)

2078' G.L.

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other)

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON*

CHANGE PLANS

SUBSEQUENT REPORT OF:

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

(NOTE: Report results of multiple completion on Well
Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

It is proposed to acidize the B-1 & 2 perforations, 5614-22' and 5632-40', with 750 gallons of 15% HCL, 10% U-66 solvent, inhibitor and iron sequestering agent added. A casing leak occurred in this well in 1964. After the leak was repaired the fluid recovered from this well dropped from 190 BFPD to 130 BFPD. By acidizing the perforations the total fluid should be increased to what it was before the leak.

18. I hereby certify that the foregoing is true and correct

SIGNED ORIGINAL SIGNED BY W. G. BROWN TITLE

District Superintendent

DATE February 14, 1974

(This space for Federal or State office use)

APPROVED BY [Signature] TITLE

DISTRICT ENGINEER

DATE 2-18-74

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

GENERAL RULES

201, 202, 213,
216, 219, 230,
231, 232

(SUBMIT IN QUADRUPPLICATE)

TO

BOARD OF OIL AND GAS CONSERVATION
OF THE STATE OF MONTANA

BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS

NOTICE
THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE BOARD.

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	X
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

April 5, 1974

Following is a ~~REPORT OF WORK DONE~~ on land ~~LEASED~~ described as follows:

LEASE East Poplar Unit No. 12

MONTANA
(State)Roosevelt
(County)East Poplar Unit
(Field)Well No. 12 SW SE Section 3 T28N R51E MPM
(m. sec.) (Township) (Range) (Meridian)The well is located 660 ft. from ~~XX~~ S line and 1980 ft. from ~~XX~~ E line of Sec. 3

LOCATE WELL SITE ACCURATELY ON PLAT ON BACK OF THIS FORM.

The elevation of the ground or K.B. above the sea level is 2078' G.L.

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings, cementing points, and all other important proposed work, particularly all details of Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

The B-1 & 2 perforations at 5614-5622' and 5632-5640' were acidized with 750 gallons of 15% HCL acid with 75 gallons of U-66 Solvent, 20# L-41 Corrosion Inhibitor and 6 gallons of A-170 Iron Sequestering agent added.

Maximum Injection Rate
Minimum Injection Rate
Maximum Pressure1/2 BPM
1/4 BPM
2800#Workover Potential: 6 Hr. Test Pumped 33.81 BF = 135 BFPD 23 BOPD 112 BWPD
83% W.C.

Approved subject to conditions on reverse of form

Company Murphy Oil Corporation

Date 4-8-74

By W. H. Brown

By John R. H. J.

Title District Superintendent

District Office Agent

Title

Address P.O. Box 547, Poplar, Montana 59255

BOARD USE ONLY
API WELL NUMBER

2	5								
STATE	COUNTY	WELL							

NOTE:—Reports on this form to be submitted to the appropriate District for approval

WHEN USED AS PERMIT TO DRILL, PERMIT EXPIRES 90 DAYS FROM DATE OF
APPROVAL IF WELL NOT SPUDDED OR EXTENSION REQUESTED.
OVER

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEYSUBMIT IN THE
(Other instructions on reverse side)Form approved.
Budget Bureau No. 42-R1424.

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input type="checkbox"/>	5. LEASE DESIGNATION AND SERIAL NO. BLM-A-029305-A
2. NAME OF OPERATOR Murphy Oil Corporation	6. IF INDIAN, ALLOTTEE OR TRIBE NAME Fort Peck
3. ADDRESS OF OPERATOR P.O. Box 547, Poplar, Montana 59255	7. UNIT AGREEMENT NAME East Poplar Unit
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.) At surface 660' from the South line and 1980' from the East line Section 3	8. FARM OR LEASE NAME East Poplar Unit
14. PERMIT NO.	9. WELL NO. No. 12
15. ELEVATIONS (Show whether DF, RT, GR, etc.) 2078' G.L.	10. FIELD AND POOL, OR WILDCAT East Poplar Unit
	11. SEC., T., R., M., OR BLE. AND SURVEY OR AREA SW SE Section 3, T28N, R51E
	12. COUNTY OR PARISH Roosevelt
	13. STATE Montana

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF ☐FRACTURE TREAT ☐SHOOT OR ACIDIZE ☐REPAIR WELL ☐

(Other)

PULL OR ALTER CASING ☐MULTIPLE COMPLETE ☐ABANDON* ☐CHANGE PLANS ☐

SUBSEQUENT REPORT OF:

WATER SHUT-OFF ☐FRACTURE TREATMENT ☐SHOOTING OR ACIDIZING ☒

(Other)

REPAIRING WELL ☐ALTERING CASING ☐ABANDONMENT* ☐

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

The B-1 & 2 perforations at 5614-5622' and 5632-5640' were acidized with 750 gallons of 15% HCL acid with 75 gallons of U-66 Solvent, 20# L-41 Corrosion Inhibitor and 6 gallons of A-170 Iron Sequestering agent added.

Maximum Injection Rate

1/2 BPM

Minimum Injection Rate

1/4 BPM

Maximum Pressure

2800#

Workover Potential: 6 Hr. Test Pumped 33.81 BF - 135 BFPD 23 BOPD 112 BWPD
83% W.C.

18. I hereby certify that the foregoing is true and correct

SIGNED ORIGINAL SIGNED BY W. G. BROWN TITLE District Superintendent

DATE April 5, 1974

(This space for Federal or State office use)

APPROVED BY *W. G. Brown*

TITLE

DATE 4-8-74

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL ☒ GAS WELL ☐ OTHER ☐

2. NAME OF OPERATOR

Murphy Oil Corporation

3. ADDRESS OF OPERATOR

P.O. Box 547, Poplar, Montana 59255

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.)
At surface

660' from the South line and 1980' from the East line

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)

2078' G.L.

5. LEASE DESIGNATION AND SERIAL NO.

BLM-A-029305-A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

Fort Peck

7. UNIT AGREEMENT NAME

East Poplar Unit

8. FARM OR LEASE NAME

East Poplar Unit

9. WELL NO.

No. 12

10. FIELD AND POOL, OR WILDCAT

East Poplar Unit

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA

C SW SE Section 3,
T28N, R51E

12. COUNTY OR PARISH

13. STATE

Roosevelt

Montana

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other)

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON*

CHANGE PLANS

SUBSEQUENT REPORT OF:

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

It is proposed to set a packer below the B-2 Zone, perforate the B-4 Zone (5693-5698') together with the B-3 Zone (5655-5660') and test. Then isolate all B Zones and perforate and test the A-4 Zone (5501-5503'). These zones will be acidized if needed after perforating.

Expected daily production of 650 BFPD, 590 BWPD, 60 BOPD. This would give an increase of 38 BOPD.

18. I hereby certify that the foregoing is true and correct

SIGNED

Henry C. Huff

TITLE

District Superintendent

DATE

August 10, 1976

(This space for Federal or State office use)

APPROVED BY

Wingill B. Pauli

TITLE

DISTRICT ENGINEER

DATE

8-11-76

CONDITIONS OF APPROVAL, IF ANY:

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS

NOTICE
THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE COMMISSION.

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement	X	Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

August 10, 1976

Following is a notice of intention to do work on land leased described as follows:

LEASE East Poplar Unit No. 12

MONTANA
(State)

Roosevelt
(County)

East Poplar Unit
(Field)

Well No. 12 SW SE Section 3 T28N R51E MPM
(m. sec.) (Township) (Range) (Meridian)

The well is located 660 ft. from line and 1980 ft. from line of Sec. 3

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is 2078' G.L.

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

It is proposed to set a packer below the B-2 Zone, perforate the B-4 Zone (5693-5698') together with the B-3 Zone (5655-5660') and test. Then isolate all B Zones and perforate and test the A-4 Zone (5501-5503'). These zones will be acidized if needed after perforating.

Expected daily production of 650 BFPD, 590 BWP 60 BOPD. This would give an increase of 38 BOPD.

Approved subject to conditions on reverse of form

Date August 11, 1976

By Julian L. Smith P.E.
District Office Agent Title

Company MURPHY OIL CORPORATION

By Gary E. Hoff
District Superintendent Title

Address P.O. Box 547, Poplar, Montana 59255

COMMISSION USE ONLY
API WELL NUMBER

2	5								
STATE	COUNTY	WELL							

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

2

GENERAL RULES

201, 202, 213,
216, 219, 230,
231, 232

(SUBMIT IN QUADRUPLICATE)

TO

BOARD OF OIL AND GAS CONSERVATION
OF THE STATE OF MONTANA

BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS

NOTICE
THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE BOARD.

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	X
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

September 22, 1976

Following is a ~~XXXXXX~~ report of work done on land ~~XXXXXX~~ leased { described as follows:

LEASE East Poplar Unit No. 12

MONTANA
(State)Roosevelt
(County)East Poplar Unit
(Field)

Well No. 12 SW SE Section 3 T28N R51E MPM
(m. sec.) (Township) (Range) (Meridian)

The well is located 660 ft. from ~~XXX~~ S line and 1980 ft. from ~~XXX~~ E line of Sec. 3

LOCATE WELL SITE ACCURATELY ON PLAT ON BACK OF THIS FORM.

The elevation of the ground or K.B. above the sea level is 2078' G.L.

READ CAREFULLY

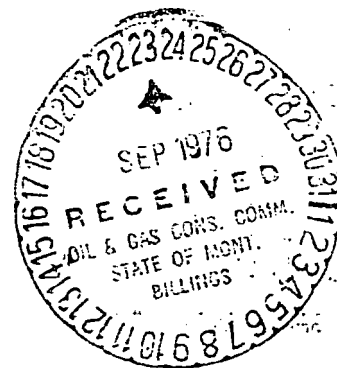
DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings, cementing points, and all other important proposed work, particularly all details of Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

See Attached Sheet



Approved subject to conditions on reverse of form

Date SEP 23 1976

By *Claire L. Thompson*
District Office Agent Title

Company Murphy Oil Corporation

By *Billy D. Melcar*

Title District Superintendent

Address P.O. Box 547, Poplar, Montana 59255

BOARD USE ONLY
API WELL NUMBER

2	5								
STATE	COUNTY	WELL							

NOTE:—Reports on this form to be submitted to the appropriate District for approval

WHEN USED AS PERMIT TO DRILL, PERMIT EXPIRES 90 DAYS FROM DATE OF APPROVAL IF WELL NOT SPUDDED OR EXTENSION REQUESTED.

OVER

Perforated the B-3 at 5655-5660' and the B-4 at 5693-5698'. Acidized the perforations with 250 gallons of RA-8 with 2 gallons A-170 inhibitor and 1 gallon of W-27 demulsifier added. Pumped into formation at 3/4 BPM with 1400 PSI - 1400 PSI 15 Min. SIP 600 PSI. Very little fluid movement.

Re-acidized the B-3 perforations with 500 gallons of 15% BDA acid with 5 gallons A-170 inhibitor and 15# L-41 iron sequestering agent added. ISIP 1200# 15 Min. SIP 400#. Still very little fluid movement.

Treated the B-1, 5614-22', B-2, 5632-40', and B-3, 5655-60' with 5,000 gallons of HOWCO Mod 202. Also treated the B-4 Zone, 5660-5655', with 3,000 gallons HOWCO Mod 202. Run Reda in well - not enough fluid to keep pump running. Pulled and ran rod pump. Pumping at the rate of 285 BFPD 250 BHPD 35 BOPD 88% W.C. Workover Potential.

085-05049

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEYSUBMIT IN TRIPLICATE*
(Other instructions on re-
verse side)Form approved.
Budget Bureau No. 42-R1424.

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input type="checkbox"/>	U. S. Geological Survey
2. NAME OF OPERATOR Murphy Oil Corporation	RECEIVED
3. ADDRESS OF OPERATOR P.O. Box 547, Poplar, Montana 59255	SEP 23 1976
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.) At surface 660' from the South line and 1980' from the East line	Billings, Montana
14. PERMIT NO.	15. ELEVATIONS (Show whether DF, RT, GR, etc.) 2078' G.L.
7. UNIT AGREEMENT NAME East Poplar Unit	
8. FARM OR LEASE NAME East Poplar Unit	
9. WELL NO. No. 12	
10. FIELD AND POOL, OR WILDCAT East Poplar Unit	
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA C SW SE Section 3, T28N, R51E	
12. COUNTY OR PARISH Roosevelt	13. STATE Montana

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>	SHOOTING OR ACIDIZING <input checked="" type="checkbox"/>	ABANDONMENT* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	(Other) <input type="checkbox"/>	(Other) <input type="checkbox"/>

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Perforated the B-3 at 5655-5660' and the B-4 at 5693-5698'. Acidized the perforations with 250 gallons of RA-8 with 2 gallons A-170 inhibitor and 1 gallon of W-27 demulsifier added. Pumped into formation at 3/4 BPM with 1400 PSI ISIP - 1400 PSI 15 Min. SIP 600 PSI. Very little fluid movement.

Re-acidized the B-3 perforations with 500 gallons of 15% BDA acid with 5 gallons A-170 inhibitor and 15# L-41 iron sequestering agent added. ISIP 1200# 15 Min. SIP 400#. Still very little fluid movement.

Treated the B-1, 5614-22', B-2, 5632-40', and B-3, 5655-60' with 5,000 gallons of HOWCO Mod 202. Also treated the B-4 Zone, 5660-5655', with 3,000 gallons HOWCO Mod 202. Run Reda in well - not enough fluid to keep pump running. Pulled and ran rod pump - Pumping at the rate of 285 BFPD 250 BWPD 35 BOPD 88% W.C.. Work-over potential.

18. I hereby certify that the foregoing is true and correct

ORIGINAL SIGNED BY
SIGNED BILLY C. MELEAR

TITLE District Superintendent DATE September 17, 1976

(This space for Federal or State office use)

APPROVED BY Virginia Paul TITLE DISTRICT ENGINEER
CONDITIONS OF APPROVAL, IF ANY:

DATE 9-30-76

GEOLOGICAL DATA

API # 25-08 : 05049

Budget Bureau No. 42-R355.1
Approval expires 11-30-49.

Form 9-380 51 E

RECEIVED

Billings

SERIAL NUMBER 314-A-012211

LEASE OR PERMIT TO PRODUCE

JAN 27 1953

UNITED STATES

DEPARTMENT OF THE INTERIOR

BILLINGS

GEOLOGICAL SURVEY

RECEIVED

JAN 26 1953

U.S. GEOLOGICAL SURVEY

Billings

DATE	TIME	WELL NO.	SECTION	TOWNSHIP	RANGE	MERIDIAN	COUNTY	STATE
1953	12:00	12	3	28	5	1	ROOSEVELT	MONTANA

LOG OF OIL OR GAS WELL

LOCATE WELL CORRECTLY BEHIND: 5000' HAYLO: 3500' DISTANCE FROM 2072 TO 2110' OF
WELL NO. 12, SECTION 3, T. 28 N. R. 5 E. MERIDIAN 1, COUNTY ROOSEVELT, STATE MONTANA
Company: Barling Corporation Address: Box 76, Poplar, Montana

Lessor or Fract: Barling Corporation Well No. 12 Section 3 T. 28 N. R. 5 E. Meridian 1 County ROOSEVELT State MONTANA

Location: 660' N. of S. Line and 1980' E. of E. Line of Sec. 3, 1980' Elevation 2078 gr.

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed: Harold Miller District Production Supervisor
Date: January 15, 1953

The summary on this page is for the condition of the well at above date.

Commenced drilling: October 13, 1952 Finished drilling: December 3, 1952

OIL OR GAS SANDS OR ZONES

(Denote gas by G)
No. 1 from 5784 to 5794 No. 4 from 5794 to 5802

No. 2 from 5517 to 5625 No. 5 from 5625 to 5638

No. 3 from 5638 to 5648 No. 6 from 5648 to 5658

IMPORTANT WATER SANDS

No. 1 from 5658 to 5668 No. 3 from 5668 to 5678

No. 2 from 5678 to 5688 No. 4 from 5688 to 5698

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated		Purpose
							From	To	
13 3/8	48			271					Conductor
9 5/8	36			196					Surface
5 1/2	26			101					Production

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
13 3/8	42'	8 yds. Remix, 14 Ideal	By hand		
9 5/8	1019'	400	Pump & Plug		
5 5/8	1019'	200	Pump & Plug		

Adapters—Material

Size

Depth set

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out
		Jet	2 per ft.	11-14	5793-5799	C
		Jet	4 per ft.	11-18	5682-5689	B

TOOLS USED

Rotary tools were used from 0 feet to 5800 feet, and from feet to feet

Cable tools were used from feet to feet, and from feet to feet

DATES

, 19

Put to producing December 5, 1952

The production for the first 24 hours was 109.04 barrels of fluid of which 98.2 % was oil; % emulsion; 1.8 % water; and % sediment. Gravity, °Bé.

If gas well, cu. ft. per 24 hours Gallons gasoline per 1,000 cu. ft. of gas

Rock pressure, lbs. per sq. in.

EMPLOYEES

J. E. Burns, Driller K. E. Harlan, Driller

John Garrett, Driller

FORMATION RECORD

FROM—	TO—	TOTAL FEET	FORMATION
Formation Tops Schlumberger Measurements			
		1150	Eagle
		1987	Niobrara
		2135	Carlisle
		2334	Greenhorn
		2534	Groneras
		2688	Upper Muddy
		2899	Muddy sand
		3112	Dakota Silt
		3902	Ellis
		4087	Bierden
		4262	Piper Shale
		4339	Piper Limestone
		4390	Gypsum Springs
		4585	Spearfish
		4722	Amsden
		4818	Heath
		5370	Madison
		5484	A Zone Porosity
		5617	B-1 Zone "
		5634	B-2 Zone "
		5794	C Zone "
FROM—	TO—	TOTAL FEET	FORMATION

(over)

16-42004-2

FORMATION RECORD—Continued

LOG OF OIL OR GAS WELL

E.P.U. # 12
(continued)

Week ending November 21, 1952

Perforated open hole from 5793 to 5799 with 2 shots per foot; Tested "C" Zone from 5790-5800. Tool open for 9 hours, closed 20 minutes; good blow throughout; gas to surface in 16 minutes. Recovered 218' mud, heavily cut with oil and gas; 212' muddy salt water (chl. 18,000 ppm.) IBHFP: 0 FBHFP: 75# BHSIP: None Hydro: 3175# Acidized "C" Zone with 1000 gallons; cleaned well into pits. Well flowed 24 barrels of 42.2 gravity oil (corr.) and 9 barrels salt water (chl. 75,000 ppm) in 9 hours on 10/64" choke. Gas from same zone estimated at 750,000 cu. feet per day, open flow. Killed flow from "C" zone. Set a Model "D" Baker Production Packer at 5770. Set a blind Baker Seal Nipple in packer. Perforated "B-2" zone from 5632 to 5640 with 4 shots per foot. Tested perforations for 5 hours with Johnston Tool. No fluid to surface, so swabbed with tool in hole. Found fluid in hole at 3300'. Swabbed tubing dry in 4 trips. Recovered oil with 5% water. Attempted to acidize through test tool with 500 gallons; established communication between tubing, 5 1/2" casing, and 9 5/8" casing. Tested casing for leak with Baker Pressure Tool. No leak could be found in either the 5 1/2" or 9 5/8" casing. Tested perforations with Pressure Tool. Found no evidence of channeling in cement. Oil and mud flowing from annulus between 5 1/2" casing and 9 5/8" casing. Gravity of oil is 39.4° (corr.). A re-run on Samples found shows of oil in both the Heath sand at 4850 to 4890 and the Kibbey Sand at 5130. Top of cement is estimated to be at approximately 4400'. Acidized "B-2" Zone with 1000 gallons. Displaced acid at rate of 1 barrel per minute at 3200#. Formation did not break down. Flowed displacement of oil out in 16 minutes. Made 1 head of acid and died. Made preparations to swab, and started flowing before swabbing started. Flowed back acid water and oil. Cleaned into pits and turned into test tank. Flowed 2 barrels per hour, 30% water, on 1/8" choke. Flowed 55 barrels oil, and 3 barrels water in 13 hours, open flow. Now flowing into test tank.

Week Ending November 28, 1952

Acidized "B-2" zone with 1000 gallons. Flowed 55 barrels oil and 3 barrels water in 13 hours, open flow. Swabbed 33 barrels oil and 10 barrels water in 6 hours. Fluid level lowered to 2000'. Flowed 14 barrels oil and 2 barrels water in 6 hours, open flow. Swabbed 48 barrels oil and 12 barrels water in 6 hours; fluid level lowered to 4000'. Flowed 29 barrels oil and 2 barrels water in 13 hours, open flow. Re-acidized "B-2" zone with 2500 gallons. Flowed and swabbed oil and water into pits. Turned into test tank. Flowed 2.5 barrels of oil per hour with 10% water.

Week ending December 5, 1952

Perforated "B-1" zone from 5614-5622 with 4 shots per foot. Tested perforations with packers set at 5605 and 5627. Tool open with strong blow. Gas to surface in 129 minutes; oil cut mud to surface in 279 minutes. Very slow but continuous flow of heavy oil cut mud and oil for 3 hours. Swabbed into pits, 50% water. Pulled tool out of hole, and went in hole with fishing tool to fish packer rubbers out of hole. Also fished blind seal nipple out of Baker Model "D" packer. Went in hole with tubing. Tubing perforated both above and below the production packer in order to flow all zones through the tubing. Displaced mud with oil and turned into tanks at 3:15 A.M., 12-3-52. Flowed 27 bbls. oil in 5 hours. Pumped 10.8# mud in annulus between 9 5/8" and 5 1/2" casing in order to kill flow of oil from some upper zones. Rig released at 11:00 P.M., 12-3-52.

Well No. 3-A
 C.H. Murphy Jr. et al-
 Well Name _____ Twp. 28 N.
 E. Poplar Unit #12 _____ Rge. 51 E.
 Structure _____
 Poplar _____ Sec. 3
 County _____ Location _____
 Roosevelt _____ C SW SE
 State _____ 660 N/S
 Montana _____ 1980 W/E
 Surface Elevation and Formation
 2039 KB
 Landowner _____
 E. Poplar Unit BLM-A-029305-A
 Lessee _____
 C.H. Murphy et al API # 25-0594050
 Drilling Company _____
 C.H. Murphy Jr et al
 Representative in Charge _____
 Contractor or Driller _____

Date Location Date Spudded
 10-7-52 Add 10-10-52 HHP) 10-14-52
 10-17-52 rng. surface casing (FCP)
 10-23-52 Drilling 3902, 968.93'
 of 9-5/8" w/ 400 sx (ATE (FCP)
 11-7-52 Drilling 5700, DST A zone
 5484-5504 open 2 hrs. no SI; weak
 blow; top packer failed after 2 hrs
 rec 120' free oil, 30' mud heavily
 c/w g & o; 30' mud lightly c/w o&g
 90' salt water; 150' clean mud,
 FP 30#, no SI Hy 3050#; DST B 2 zone,
 5632-44 open 4 hrs, SI 120 min, weak
 blow, rec 195' clean oil, 90' mud
 heavily c/w o & g; 150' mud c/w g,
 30' m c/w water & 270' salt water;
 FP 300#, SI 2650#, Hy 3250#.

Completed	Total Depth	Formation
11-8-52	5800	
Oil	Gas	Water
I.P. 150 BOPD		
Final Result		

DST Bz 5630-37½ open 4 hrs, SI 22-
 SI 20 min; rec trace free oil, 900'
 mud slightly c/w o & g, 210' mud,
 heavily c/w gas, slightly c/w oil,
 150' salt water; FP 450#, SI 2800#
 Hy 3250#, Samp tops: Chas-Madison
 5484; B 1 5617; B 2 5634; Greenhorn
 2300; Piper sh. 4245; Piper lm. 4318
 Amsden 4717, Kibbey Lm. 5270 (FCP)
 11-14-52 Comp 11-8-52 TD 5800 (FCP)

11-21-52 DST 5790-5800,
 a/w 1000 gals, flowed 24 BO & 9 B.
 salt water 1/64" choke, plus est
 750,000 c.f. gas; killed well, set
 packer 5770, set Baker seal, sealin
 off lower zone, perf B2 zone 5632-
 40 DST 5632-40, open 5 hrs no fluid
 swabbed w/ tube in hole, mud and
 mostly oil, swabbed dry; attempted
 to acidize, would not take acid;
 pulled tool to look for leak in the
 perforating & testing (FCP)

11-28-52 5½" at 5778 w/ 200 sx.
 Perf C zone 2 shots per ft treated
 w/ 1000 gals; flowed 211 B of 42.2
 gr oil, 9 b s & w in 9 hrs thru
 10/64 choke, gas est 750 Mcf. Perf
 B2 5632-5640 w/ 4 shots per ft.
 treated w/1000 gals, well flowed
 2 BOPH 30% water on 1/8" choke,
 flowed 55 BO 7 3 SW in 13 hrs. will
 test B1 zone (FCP)

12-5-52 Perf B 5614-22 w/ 4' shots;
 DST straddle packers 5605-27 open
 w/ weak blow 30 min, inc. to strong
 blow 2 hrs, dead in 4 hrs. bottom pac
 er failed; reran test, packers same,
 open strong blow, gas to surf 129 mi.
 oil cut mud to surf two hrs. 79 min,
 very slow but continuous flow of

heavy ocb & free oil for 3 hrs; swabbed into pits approx 50% water;
flowing Bl 7 C zones 2 BFPH: testing (FCP)

12-16-52 5½" at 5778 w/ 200 sx. testing (FCP)

3-12-53 I.P. 150 BOPD (FCP)

Location: 1/4 SW SE Sec. 3-T28N-R51E
 Spacing = 40 acres
 Elevation: 2078 Gr. - 2089 K.B.
 Spudded: 10-15-52
 Completed: 12-3-52
 T.D.: 5802' Schl.
 Prod. Zones: B-1 5614-22'; B-2 5632-40'
 C-2 open hole 5793-99'

Schlumberger Logs

	Depth	Datum	Thickness
Judith River	754	+1335	
Greenhorn	2334	-245	
Muddy Sd	2899	-810	
Dakota Silt	3112	-1023	
Piper Ls	4339	-2250	
Amsden	4722	-2633	
Heath	4818	-2729	
Otter	4980	-2891	
Kibbey Sd	5137	-3048	
Kibbey Ls	5276	-3187	
Madison	5370	-3281	
A-1	**5466	-3377	4'
A-2	**5480	-3391	4'
A-3	5495	-3406	5'
A-4	5501	-3412	30'
B-1	5619	-3530	9'
B-2	5636	-3547	13'
B-3	**5654	-3565	7'
B-4	**5693	-3604	5'
B-5	5729	-3640	7'
C-1	*5774	-3685	7'
C-2	5794	-3705	7'

**Probable prod. zones from DST structural position, etc.

*Shows

Drill Pipe Corrections (Made)

5483 Indicator = 5470 BLM (-13')

Coring Intervals:

#1 5470-5512 Rec. 30' A-2, 3 & 4
 #2 5601-5644 Rec. 40' B-1 & 2
 #3 5740-5775 Rec. 30' C-1
 #4 5782-5792 Rec. 10' C-2
 #5 5792-5800 Rec. 9' C-2

Drill Stem Tests:

DST #1 5484-5504 A-3 & 4. Op 2 hrs., SI 0. Rec. 120' free oil, 30' mud, hvly o & g cut, 30' mud, lightly O & g cut, 90' s.w., chl. 62,000 ppm, 150' cln mud. IBHFP 0 FBHFP 50 No SIP, Hydro 3050#.
 DST #2 5632-44 B-2 Op 4 hrs, SI 20 min. Rec. 195' cln oil, 90' mud hvly cut w/ o & g, 150' mud w/gas, 30' mud cut w/ wtr, 270' s.w. chl. 82,000 ppm. IBHFP 0 FBHFP 300, BHSIP 2650#, Hydro 3250#.
 DST #3 5615-26 B-1, Op 4 hr, SI 20 min. Rec. 50' cln oil, 65' mud, hvly cut w/ oil & gas, 270' mud, cut w/o & wtr, 90' fluffy mud hvly cut w/ gas, oil & wtr, 180' s.w. IBHFP 0 FBHFP 75 BHSIP 2500, Hydro 3225#.

History Subsequent to Completion:

8-8-53: C zone blanked off with Bridge Plug.

DST #4 5630-5637 B-2 Op 4 hr, SI 20 min. Rec. tr free oil, 900' mud, sl cut w/o & gas, sl cut w/oil, 150' s.w. chl. 52,000 ppm. IBHFP 0 FBHFP 450 BHSIP 2800 Hydro 3250.

DST #5 5788-5800 C-2 min-run Op 4 hrs, SI 20 min. Rec. 1350' cln mud, 490' sl o & g cut mud. No pressures. Found leak in drl pipe.

DST #6 5790-5800 C-2, re-run op 6 hr, SI 20 min. Rec. 637' o & g cut mud, 1952' cln mud. IBHFP 0 FBHFP 0 No SIP Hydro 3125#.

DST #6 re-run, Op 9 hr SI 20. Rec. 218' O & G cut mud, highly cut w/oil, 212' muddy s.w. chl 18,000 ppm IBHFP 0 FBHFP 75 BHSIP 0 Hydro 3175.

DST #7 (5800 attempted test, mis-run, re-tact) Op 5 hrs swabbed oil from 3300-5200.

DST #8 5614-22 Op 4 hr. B-1 zone. Bottom pkc failed. re-run 5605-5627. Swabbed to pits, 50% wtr.

MURPHY CORPORATION

EAST POPLAR UNIT WELL NO. 12

=====

LOCATION: C SW SE Section 3, Township 28 North, Range 51 East,
Roosevelt County, Montana

ELEVATION: 2078' Ground; 2089' K.B.

SPUDED: October 13, 1952

COMPLETED: December 3, 1952

TOTAL DEPTH: 5800' Driller = 5802' Schlumberger

=====

October 13: Spudded 10-13-52.

October 14: Set 27' 1 3/8" conductor pipe at 42' with 14 sacks
cement. Drilled to 1015'.

October 16: Ran Schlumberger ES. Set 961.93 of 9-5/8" casing at
973.58' with 400 sacks cement; plug down 3:00 a.m. 10-16.

October 17- Drilled from 1015 to 5473. Cut and pulled Core No. 1,
November 4: 5474-5512, recovered 34'. Ran DST #1, 5484-5504

November 5-6: Drilled to 5601. Cut and pulled Core No. 2, 5601-5644,
recovered 41'. Ran DST #2, 5632-5644. Ran DST #3,
5615-5625.

November 7-8: Drilled to 5646. Ran DST #4, 5630-5638. Drilled from
5646 to 5740. Cut and pulled Core No. 3, 5740-5775,
recovered. Depth correction: 5775=5782 S.L.M. Cut
and pulled Core No. 4, 5782-5792, recovering 10'.

November 9- Cut and pulled Core No. 5, 5792-5800. Ran DST #5, 5788-
November 10: 5800 (mis-run). Ran Schlumberger ES and ML. Ran 5778.10'
of 5 1/2" casing; set at 5789.50' with 200 sacks cement.
Plug down at 11:20 a.m. 11-10-52. T.D. Schl. 5802'.

November 11- Ran DST #5 again, 5790-5800'.

November 15:

November 16: Ran DST #6, 5790-5800. Retest. Remaining tests described
under "Completion Summary."

December 3: Rig released at 11:00 p.m. 12-3-52.

EAST POPLAR UNIT WELL NO. 12

DRILLING BIT RECORD

<u>No.</u>	<u>Size</u>	<u>Type</u>	<u>Serial</u>	<u>Depth Out</u>	<u>Feet</u>	<u>Hours</u>
1	12-1/4	OSGJ	Re-tip	1015	1015	
2	8-3/4	OSCLJ	68050	2745	1730	17-3/4
3	8-3/4	CSC-J	62521	3380	645	11-1/2
4	8-3/4	OSC-J	62522	3701	321	12
5	8-3/4	OSC-J	12954	4020	319	11
6	8-3/4	OSC-J	12959	4380	360	14-1/2
7	8-3/4	OSC-J	62521	4513	133	14
8	8-3/4	2GWJ	Reed	4526	13	4
9	8-3/4	OSQ2	62702	4695	169	14
10	8-3/4	OSQ2	62675	4907	212	16
11	8-3/4	OSQ2	62700	4962	55	4-1/2
12	8-3/4	OW	35117	5105	143	15
13	8-3/4	OW	68510	5262	157	
14	8-3/4	OWV	68447	5378	116	14-1/2
15	8-3/4	OWV	81425	5470	92	9
	7-7/8	Chris		5512	42	
16	7-7/8	OWS	76228	5600	88	14-3/4
	7-7/8	Chris		5644	44	
17	7-7/8	OWS	88051	5644 (Condition Hole)		
	7-7/8	OWS	Rerun	5646	2	
	7-7/8	OWS	Rerun	5690	34	
	7-7/8	OWS	Rerun	5697	17	
18	7-7/8	2HM	Reed	5740	43	5-1/2
	7-7/8	Chris		5800	60	
	7-7/8	OWS	rerun	5800 (Condition Hole)		

Note: The above information was obtained from Hughes Tool Company

EAST POPLAR UNIT WELL NO. 12

DIAMOND CORE BIT RECORD

<u>Date</u>	<u>Core No.</u>	<u>Diamond Bit No.</u>	<u>Size</u>	<u>From</u>	<u>To</u>	<u>Footage</u>	<u>Rec.</u>	<u>Remarks</u>
10-31	1	F-1869	7-7/8	5474	5512	38	33	Show
11- 3	2	F-1869	7-7/8	5601	5644	43	43	Show
11- 8	3	F-1869	7-7/8	5740	5775	35	37	No Show
11- 8	4	F-1869	7-7/8	5775	5785	10	10	No Show

=====

E L E C T R O L O G D A T A

=====

<u>TYPE OF LOG</u>	<u>INTERVAL LOGGED</u>
Schlumberger	
Electrical Survey	80'-5801'
Detail	5000'-5801'
Microlog	5000'-5799'
Lane-Wells Gamma-Ray ¹ Neutron Log	5400'-5769'

LOG TOPS

	<u>Depth</u>	<u>Datum</u>	<u>Thickness</u>
Eagle	1150	+ 939	
Niobrara	1987	+ 102	
Carlile	2135	- 46	
Greenhorn	2334	- 245	
Graneros	2534	- 445	
U. Muddy	2688	- 599	
Muddy Sand	2899	- 810	
Dakota Silt	3112	-1023	
Morrison	3515	-1426	
Rierdon	3902	-1813	
Piper Shale	4262	-2173	
Piper Ls.	4339	-2250	
Gypsum Sprgs	4390	-2301	
Spearfish	4585	-2496	
Amsden	4722	-2633	
Heath	4818	-2729	
Otter	4980	-2891	
Kibbey	5137	-3048	
Kibbey Ls.	5276	-3187	
Madison	5370	-3281	
A-1	5466	-3377	4'
A-2	5480	-3391	4'
A-3	5495	-3406	5'
A-4	5501	-3412	30'
B-1	5619	-3530	9'
B-2	5636	-3547	13'
B-3	5654	-3565	7'
B-4	5693	-3604	5'
B-5	5729	-3640	?
C-1	5774	-3685	?
C-2	5794	-3705	?

C O R E D E S C R I P T I O N S

Core No. 1

5474-5512

Rec. 34'

C. T. 8, 9, 9, 9, 11, 12, 13, 13, 9, 14, 15, 15, 16, 11, 18, 13, 19,
22, 22, 22, 20, 15, 17, 14, 11, 24, 15, 11, 14, 17, 13, 11, 22,
23, 20, 15, 39, 40

1' Dolomite, light gray, earthy dense to very poor porosity, medium
75 soft. No show.

4' Anhydrite, gray, fine crystalline, dense, gypsiferous, medium
19 soft, numerous very thin irregular shale partings.

5' Anhydrite, light gray, fine to medium crystalline, soft. No
54 show.

7' Limestone, dark gray, amorphous, very hard and dense, except
91 for numerous short, tight, irregular fractures, some vuggy
porosity along fracture planes, some free oil bleeding from
along fractures; fair golden-yellow fluorescence along frac-
ture planes and in vugs; fair oil odor and stain along fractures.

3'6" Limestone, dark gray to black, amorphous to microcrystalline,
94.6 medium hard, dense; numerous thin black shale partings; occasional
short, very tight, incipient vertical fractures; very slight oil
odor and stain along fractures; weak, spotted, dull yellow fluores-
cence along fracture planes.

8'6" Limestone, light gray, fine crystalline, medium soft, dense
55.3 except for numerous very short, irregular, tight fractures; some
free oil bleeding from along fractures, fairly even, milky
white fluorescence along fracture planes; fair oil odor and taste
along fracture planes; all show in fractures.

2' Limestone, dark brownish-gray, medium crystalline, medium soft,
65 fair intercrystalline porosity, fair permeability; numerous very
small calcite crystals scattered throughout; slight sulfurous
odor on fresh break; entire unit looks wet. No show.

2' Limestone, dark gray, microcrystalline, very hard, dense, except
61 for numerous very thin tight, vertical fractures. No show in
mass of core or along fracture planes.

1' Limestone, dark gray, very highly broken up and ground up by bit,
crystallinity or show cannot be determined, due to grinding up
of core. No fluorescence or odor.

Analysis run on Bottom 24'.

CORE DESCRIPTIONS

Core No. 2

5601-5644

Rec. 411

- C. T. 22, 5, 5, 5, 5, 8, 12, 17, 15, 12, 16, 15, 16, 14, 14, 11, 8, 8, 16, 14, 7, 5, 4, 7, 13, 10, 13, 15, 14, 15, 10, 14, 11, 6, 4, 5, 5, 6, 10, 11, 7, 7, 7
- 6" Dolomite, very anhydritic, medium gray, fine crystalline, medium hard, dense. No show.
- 6" Salt, clear, amorphous. No show
- 11'6" Anhydrite, light gray, fine crystalline, medium hard, dense; occasional black shale partings; one foot zone of large vugs, due to solution of salt one foot from top of unit. No show.
- 3' Limestone, light to medium brownish-gray, fine crystalline, earthy; fairly porous and permeable with occasional short, very tight, vertical fractures; numerous acicular calcite crystals; fair oil stain and odor; medium golden-yellow, spotty, fluorescence along fracture planes and in mass of core.
- 1'6" Limestone, light brownish-gray, amorphous, dense, except for numerous very thin, very tight vertical fractures, the fractures being filled with calcite crystals; numerous black, stylolitic partings; fair oil odor and taste with medium golden-yellow, fairly even fluorescence along fracture planes.
- 4'6" Limestone, medium brownish-gray, fine to medium crystalline, earthy, fair porosity and permeability with occasional short, tight, vertical fractures. Numerous calcite crystals along fracture planes and in mass of core; occasional black, stylolitic partings; good oil stain, odor and taste; some bleeding of oil one foot from top of unit; medium golden-yellow, fairly even to spotty fluorescence along fracture planes and in mass of core. Bottom 3 feet of unit looks wet.
- 8'6" Anhydrite, light gray, fine crystalline, hard, dense. Slightly calcareous in top becoming very calcareous and highly brecciated and fragmental in bottom one foot. Bottom one foot approximately 50 percent limestone, 50 percent anhydrite. No show.
- 11' Limestone, light to medium brownish-gray, fine to medium crystalline, earthy, fairly hard; several zones of hard, dense, darker limestone, 1-4" thick; numerous black, stylolitic partings and numerous calcareous crystals throughout unit; good porosity and permeability in top 2 feet of unit with fair to poor porosity and permeability in remainder of unit. Occasional to numerous short, tight, vertical fractures cemented with calcite in top 2 feet; numerous tight, uncemented, vertical fractures in remainder of core with bottom 3 feet of unit fairly broken up. Good oil stain, odor, and taste with some bleeding of oil in top 2 feet of unit, the rest of the unit having a salty taste. Fluorescence is medium, golden-yellow, fairly even in top 2 feet with weak, golden-yellow, spotty to streaked fluorescence in remainder of unit.

CORE DESCRIPTIONS

Core No. 3

Depth Correl: 5775=82
5740-5775

Rec: 37'5"

- C. T. 15, 22, 25, 20, 21, 20, 16, 23, 20, 17, 15, 15, 19, 17, 16, 19, 20, 18, 17, 19, 25, 14, 15, 16, 16, 15, 14, 11, 11, 11, 11, 13, 15, 9, 15
- 1' Anhydrite, light gray, medium granular, dense, fairly hard, with inclusions of light brownish-gray, medium crystalline limestone. No show.
- 1' Limestone, medium gray, fine crystalline, dense, hard, with occasional inclusions of white anhydrite. No show.
- 2' Dolomite, dark brownish-gray, fine crystalline with thin bands of medium crystalline, hard, dense, numerous very thin streaks of black shale. No show.
- 5' Limestone, very dark brownish-gray, very fine crystalline, hard, dense, few very tight hairline vertical fractures cemented with calcite, increasing to 1/16" wide in bottom 2' of unit, occasional black shale partings. No show.
- 6'5" Dolomite, medium brownish-gray, fine crystalline, hard dense, more calcite toward base of unit. No show.
- 2'6" Limestone, very dark gray, fine crystalline, dolomitic in top one foot of unit, hard, dense. No show.
- 1' Dolomite, medium brownish-gray, fine crystalline, hard, dense, very few vertical hairline fractures, cemented with calcite. No show.
- 7' Limestone, very dark brownish-gray, dense to medium crystalline, fairly hard, dense, slightly argillaceous; a few very thin, tight, vertical fractures filled with calcite, numerous fairly large calcite crystals in bottom 3 feet of unit, occasional black, stylolitic partings. No show.
- 4' Limestone, light gray, very fine crystalline, fairly hard, dense; very shaley (black) in top 3 in. and bottom 2 inches of unit, occasional short, tight, vertical fracture cemented with calcite.
- 5'6" Dolomite, medium to dark brownish-gray, fine crystalline, dense, hard, with numerous thin streaks of black shale, occasional short, vertical hairline fracture filled with calcite in bottom one foot. No show.
- 2' Limestone, medium to brownish-gray, fine-medium crystalline, medium hard, very slightly porous; occasional very thin short, tight, vertical fracture filled with calcite; slight oil odor.

CORE DESCRIPTIONS

Core No. 4

5782-5792

Rec. 10'

C. T. 46, 24, 25, 25, 25, 20, 15, 15, 15, 15

3" Limestone, dark brownish-gray, very fine crystalline, fairly hard, dense, with occasional streaks of black fissile shale. No show.

1' Dolomite, light gray, fine crystalline, very hard, dense with some small calcite crystals. No show.

8'9" Limestone, light to dark brownish-gray, fine to medium crystalline, very hard, dense. Numerous thin black shale partings; and occasional irregular bands of calcite crystals in top 2 feet of unit. Occasional thin to hairline, short, tight, vertical fractures cemented with calcite in remainder of unit. No show.

Core No. 5

5792-5800

Rec. 9'

C. T. 16, 13, 15, 8, 7, 8, 5, 6

3" Limestone, light brownish-gray; micro-to-fine crystalline, medium hard, dense, except for occasional thin vertical hairline fracture; occasional black stylolites, faint sulfurous odor on fresh break. No show.

6' Limestone, dark brownish-gray, fine to medium crystalline, medium soft, fair intercrystalline porosity, questionable permeability; occasional very tight vertical hairline fracture filled with calcite, very fossiliferous; fair oil odor on fresh break, fair even dull-yellow fluorescence; good brown oil stain throughout unit.

D R I L L S T E M T E S T S

- DST #1 5464-5504 Johnston tool, straddle packers, 1/2" bottom choke, no water cushion; tool open 2 hours, closed none; opened with weak blow for 2 hours; top packer gave way after 2 hours.
Recovered: 120' free oil
 30' mud, heavily cut with oil and gas
 30' mud, lightly cut with oil and gas
 90' salt water, chl. 62,000 ppm
 150' clean mud.
IBHFP: 0 FBHFP: 50# Hydro: 3050#. No shutin pressure.
- DST #2 5632-5644 (B-2 Zone) Johnston tool, 1/2" bottom choke, no water cushion, tool open 4 hours, closed 20 minutes; weak blow throughout.
Recovered: 195' clean oil
 90' mud, heavily cut with oil and gas
 150' mud cut with gas
 30' mud cut with water.
 270' salt water (chl. 82,000 ppm)
IBHFP: 0 FBHFP: 300# BHSIP: 2650# Hydro: 3250#
- DST #3 5615-5625 Johnston tool, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 20 minutes; opened with weak blow throughout.
Recovered: 50' free clean oil
 65' mud, heavily cut with oil and gas
 270' mud, cut with oil and water
 90' fluffy mud heavily cut with gas, oil and water.
 180' salt water
IBHFP: 0 FBHFP: 75# BHSIP: 2500# Hydro: 3225#
- DST #4 5630-5638 Johnston tool, straddle packers, 1/2" bottom choke, no water cushion; tool open 4 hours, closed 20 minutes; open with weak blow, decreasing to a very weak blow at end of test.
Recovered: Trace of free oil
 900' mud, slightly cut with oil & gas
 210' mud, heavily cut with gas and slightly cut with oil
 150' salt water (chl. 52,000 ppm)
IBHFP: 0 FBHFP: 450# BHSIP 2800# Hydro: 3250#

DRILL STEM TESTS

- DST #5 5788-5800 (mis-run), 1/2" bottom choke, no water cushion; tool open 4:55. Lost mud before tool was open. Tool open 4 hours, closed 20 minutes. Recovered: 1350' clean mud. 490' slightly oil and gas cut mud. No pressures. Found leak in drill pipe after pulling tool out of hole.
- DST #6, 5790-5800 Reran test with Johnston tester; packer set at 5770'. Tool open 6 hours, closed 20 minutes, 1/2" bottom choke. No water cushion. Strong blow throughout test. Gas to surface in 14 minutes. Main valve washed out after pulling 3 strands. Recovered: 637' oil and gas cut mud. 4952' clean mud. IBHFP: 0 FBHFP: 0 No shutin. Hydro: 3125#
- DST #6 5790-5800 Retest with Johnston tester, 1/2" bottom choke, no water cushion. Packer set 5771. Open tool at 9:45 p.m. for 9 hours, closed 20 minutes. Good blow throughout test. Gas to surface 16 minutes. Recovered: 218' oil & gas cut mud, highly oil cut. 212' muddy salt water. Chl. 18,000 ppm. IBHFP: 0 FBHFP: 75# BHSIP: None Hydro: 3175#
- DST #7 5800 (Attempted test, misrun, retest); tool open 5 hours with good blow; no fluid to surface; swabbed with Johnston test tool in hole. Found fluid at 3300'. Swabbed oil down to 5200' on first trip. Recovered oil and rat hole mud on second trip. Swabbed tubing dry with Johnston test tool in hole. Fill-up in 1 1/2 hours was 400' (1 1/2 to 2 barrels) 5% water.
- DST #8 5614-5622 Johnston tool; straddle packers set at 5605 and 5627. Tool open with weak blow for 30 minutes, increased to strong blow for 2 hours. Died in 4 hours. (Bottom packer failed). Rerun: 5605-5627. Tool open with strong blow. Gas to surface in 129 minutes. Oil cut mud to surface in 279 minutes. Very slow, but continuous flow of heavy oil-cut mud and oil for 3 hours. Swabbed to pits. 50% water.

C O M P L E T I O N S U M M A R Y

Week Ending 11-21-52:

Perforated open hole from 5793 to 5799 with 2 shots per foot. Tested "C" Zone from 5790-5800. Tool open for 9 hours, closed 20 minutes; good blow throughout; gas to surface in 16 minutes. Recovered 218' mud, heavily cut with oil and gas; 212' muddy salt water (chl. 18,000 ppm) IBHFP 0 FBHFP: 75# BHSIP: None Hydro: 3175#. Acidized "C" Zone with 1000 gallons; cleaned well into pits. Well flowed 24 barrels of 42.2 gravity oil (corr.) and 9 barrels salt water (chl. 75,000 ppm) in 9 hours on 10/64" choke. Gas from same zone estimated at 750,000 cu. feet per day, open flow. Killed flow from "C" zone. Set a Model "D" Baker production packer at 5770. Set a blind Baker seal nipple in packer. Perforated "B-2" zone from 5632 to 5640 with 4 shots per foot. Tested perforations for 5 hours with Johnston tool. No fluid to surface, so swabbed with tool in hole. Found fluid in hole at 3300'. Swabbed tubing dry in 4 trips. Recovered oil with 5% water. Attempted to acidize through test tool with 500 gallons; established communication between tubing. 5 1/2" casing and 9-5/8" casing. Tested casing for leak with Baker pressure tool. No leak could be found in either the 5 1/2" or 9-5/8" casing. Tested perforations with pressure tool. Found no evidence of channeling in cement. [Oil and mud flowing from annulus between 5 1/2" casing and 9-5/8" casing. Gravity of oil is 39.4° (corr.) A rerun on samples found shows of oil in both the Heath sand at 4850 to 4890 and the Kibbey sand at 5130.] Top of cement is estimated to be at approximately 4400'. Acidized "B-2" Zone with 1000 gallons. Displaced acid at rate of 1 barrel per minute at 3200#. Formation did not break down. Flowed displacement of oil out in 16 minutes. Made 1 head of acid and died. Made preparations to swab, and started flowing before swabbing started. Flowed back acid water and oil. Cleaned into pits and turned into test tank. Flowed 2 barrels per hour, 30% water, on 1/8" choke. Flowed 55 barrels oil and 3 barrels water in 13 hours, open flow. Now flowing into test tank.

Week Ending 11-28-52:

Acidized "B-2" zone with 1000 gallons. Flowed 55 barrels oil and 3 barrels water in 13 hours, open flow. Swabbed 33 barrels oil and 10 barrels water in 6 hours. Fluid level lowered to 2000'. Flowed 14 barrels oil and 2 barrels water in 6 hours, open flow. Swabbed 48 barrels oil and 12 barrels water in 6 hours; fluid level lowered to 4000'. Flowed 29 barrels oil and 2 barrels water in 13 hours, open flow. Reacidized "B-2" zone with 2500 gallons. Flowed and swabbed oil and water into pits. Turned into test tank. Flowed 2.5 barrels of oil per hour with 10% water. 13.2

COMPLETION SUMMARY

Week Ending 12-5-52:

Perforated "B-1" zone from 5614-5622 with 4 shots per foot. Tested perforations with packers set at 5605 and 5627. Tool open with strong blow. Gas to surface in 129 minutes; oil cut mud to surface in 279 minutes. Very slow but continuous flow of heavy oil cut mud and oil for 3 hours. Swabbed into pits, 50% water. Pulled tool out of hole, and went in hole with fishing tool to fish packer rubbers out of hole. Also fished blind seal nipple out of Baker Model "D" packer. Went in hole with tubing. Tubing perforated both above and below the production packer in order to flow all zones through the tubing. Displaced mud with oil and turned into tanks at 3:15 a.m., 12-3-52. Flowed 27 barrels oil in 5 hours. Pumped 10.8 $\frac{1}{2}$ mud in annulus between 9-5/8" and 5 $\frac{1}{2}$ " casing in order to kill flow of oil from some upper zones. Rig released at 11:00 p.m., 12-3-52.

S A M P L E D E S C R I P T I O N

1520-1550	Shale, medium gray and brownish-gray, calcareous, glauconitic; siltstone, some light gray, medium grain, very calcareous, glauconitic sandstone. Tr. limestone
1550-1570	No sample.
1570-1770	Same as 1520-50.
1770-1920	Shale, medium gray and light gray, medium grained, calcareous, glauconitic sandstone; trace siltstone; trace pyrite.
1920-1990	Siltstone, dark brownish-gray, calcareous, glauconitic; some brownish-gray, fine-grained, calcareous, glauconitic sandstone; slight trace pyrite and bentonite.
1990-2050	Same as above, with trace of dark gray shale.
2050-2070	Shale, greenish-gray, micaceous; some fine grained, glauconitic sandstone.
2070-2100	Shale, and sandstone as above; brownish-gray, calcareous glauconitic siltstone.
2100-2180	Shale, as above; sandstone, as above; brownish-gray silty shale.
2180-2300	Shale, greenish-gray, micaceous; brownish-gray, silty shale; some light gray, medium grained, calcareous, glauconitic sandstone.
2300	Sample top: Greenhorn
2300-2360	Shale, dark gray, calcareous; some dark gray limestone with white specks.
2360-2600	Shale, dark gray, calcareous, micaceous and brownish-gray calcareous, silty, glauconitic shale; trace white bentonite.
2600-2680	Shale, dark gray, slightly calcareous; some light gray, slightly calcareous shale; trace light brownish-gray silty, shale.
2680-2720	Shale, as above; trace gray, glauconitic sandstone
2720-2770	Shale, dark gray; some light brownish-gray, glauconitic, calcareous, silty shale.
2770-2790	Shale, as above; trace light gray, medium grained, glauconitic sandstone.

SAMPLE DESCRIPTION

2790-2990	Shale, dark gray and light gray, slightly micaceous; some light brownish-gray, glauconitic, calcareous, silty shale; trace of white bentonite and pyrite.
2990-3040	Shale, as above; trace very light gray, medium grained, glauconitic, peppery sandstone.
3040-3080	45' correction in drillers depth.
3080-3130	Shale, dark gray, slightly micaceous, and light gray, slightly calcareous shale; some light brownish-gray glauconitic silty shale; trace bentonite.
3130-3240	Shale, as above; trace light yellow, fine-grained, calcareous, glauconitic, peppery sandstone; slight trace bentonite
3240-3330	Shale, as above.
3330-3850	No sample
3350-3370	Shale, as above.
3370-3430	Shale, as above; trace light gray; fine grained speckled sandstone..
3430-3450	Shale, light gray, slightly calcareous; some dark gray, fissile shale; trace brownish-gray silty shale.
3450-3490	Shale, as above; trace very light brown, fine grained siliceous sandstone.
3490-3590	Shale, as above; trace white, medium grained, slightly peppery sandstone.
3590-3610	Shale, as above.
3610-3680	Shale, as above; trace sandstone and bentonite.
3680-3730	Shale, as above; trace light gray, fine grained, calcareous, glauconitic sandstone.
3730-3800	Shale, light steel gray and dark brownish-gray shale; trace brown silty shale; trace light gray, fine grained calcareous sandstone.
3800-3860	No samples
3880-3920	Shale, medium to dark steel gray; some light greenish-gray, calcareous, pyritic shale; trace dark brownish-gray shale; trace light brownish-gray, silty shale.
3920-3980	Shale, as above; trace light gray, very fine grained, glauconitic sandstone.

SAMPLE DESCRIPTION

- 3980-4070 Shale, as above; trace brownish-gray, fine grained, speckled sandstone.
- 4070-4100 Shale, as above; trace light green, very fine grained, glauconitic sandstone.
- 4100-4120 Shale, medium to dark steel gray; some light greenish-gray calcareous, pyritic shale; some light brown, very fine grained, calcareous sandstone.
- 4120-4160 Same as above, trace gray, fine grained glauconitic sandstone.
- 4160-4200 Shale, and sandstone as above; trace to some medium brown, shaley limestone.
- 4200-4240 Shale, gray and dark brownish-gray; some light greenish-gray, calcareous, pyritic shale; light brownish-gray, very calcareous, siltstone, with brown specks; trace greenish-gray and brownish-gray, fine grained, calcareous, glauconitic sandstone; trace brown shaly limestone.
- 4240-4245 Shale and siltstone, as above.
- 4245 Sample top: Piper Shale
- 4245-4310 Shale and siltstone, as above; trace calcareous brick-red shale; trace calcareous green shale.
- 4310-4318 Shale, dark gray and light gray.
- 4318 Sample top: Piper Limestone
- 4318-4400 Shale, dark gray and light gray; some light, greenish-gray, calcareous, pyritic shale; trace dark brownish-gray siltstone; trace red and green shale; some brown, hard, dense, amorphous limestone, with numerous calcite veinlets (small).
- 4400-4450 Shale, light greenish-gray, calcareous, waxy, splintery; some brownish-gray fissile shale; dark steel gray shale; trace brick red shale with gray streaks; trace black fissile shale.
- 4450-4590 Shale, as above; trace anhydrite; gray, fine grained; glauconitic, pyritic, calcareous sandstone; trace to some white-brown, hard, dense, amorphous limestone, with small inclusions and veinlets of calcite.
- 4590-4690 Sandstone, red, fine grained, oolitic; some dark brownish-gray and light greenish gray shale; trace light green, blocky shale; trace white anhydrite.

SAMPLE DESCRIPTION

4690-4800	Shale, grayish-brown and light grayish-green, waxy, splintery; trace bright blue-green shale; trace red shale; some light brown amorphous, fossiliferous limestone.
4717	Sample top: Amsden
4800-4850	Shale, dark brownish-gray, calcareous, splintery shale; some red and green variegated shale; trace purple, argillaceous dolomite.
4850-4900	Shale, light greenish-gray and brownish-gray, calcareous, splintery; some very hard reddish-brown, medium grained, angular grains, sandstone; trace red and green shale.
4900-4970	Limestone, dark brown, argillaceous, dense, some pink, medium to fine grained calcareous sandstone; trace red, sandy shale; trace ankerites; some greenish-gray shale.
4970-5000	Shale, grayish-green, waxy, splintery, calcareous shale, with some red, green, gray and purple calcareous shale.
5000	Sample top: Otter
5000-5060	Limestone, light gray, argillaceous; dense; varicolored, calcareous shale; bright blue-green shale with red dots.
5060-5120	Shale, greenish-gray, calcareous; trace limestone; trace light grayish-green calcareous, glauconitic, siltstone; trace red and green shale.
5120-5280	Sandstone, red, very fine grained, grains well rounded to subrounded; trace reddish-brown, slightly calcareous claystone; trace brick-red, slightly calcareous sandy shale.
5280-5310	Limestone, light to medium brown, hard, dense, amorphous, with numerous small calcite inclusions, with some red sandstone and shale.
5310-5360	Sandstone, red, very fine grained, slightly calcareous; some pink argillaceous limestone; some light greenish-gray, slightly calcareous shale; trace black fissile shale.
5360-5370	No sample.
5370-5378	Shale, light gray, calcareous.
5378	Sample top: Charles
5378-5400	Shale, light gray, calcareous; trace white crystalline limestone; trace white anhydrite; trace red and green shale.

SAMPLE DESCRIPTION

5400-5460 Shale, varicolored; some light gray, argillaceous, fossiliferous, amorphous limestone; trace to some white anhydrite.

5460-5474 No samples

5474-5512 Core #1

5512-5530 Limestone, light gray, medium crystalline, dolomitic; some light pink-brown, fine crystalline limestone, with streaks crystalline ls; trace white granular anhydrite.

5530-5540 Anhydrite, white, granular; some light to medium brown, dense, fine crystalline limestone, with occasional calcite crystals.

5540-5570 Anhydrite, white, granular; and dark brown, fine crystalline, anhydritic limestone; trace light gray, argillaceous, lithographic limestone; light gray, fine crystalline, porous dolomitic limestone with scattered calcite crystals.

5570-5601 Limestone, medium brown, fine crystalline, anhydrite and light brown, fine to medium crystalline limestone, with occasional calcite veinlets and clusters of calcite crystals; trace clear salt; trace white anhydrite.

5601-5644 Core #2

5644-5700 Limestone, dark grayish-brown, fine crystalline, dense, with numerous calcite crystals and veinlets; some light brown, porous, pseudo-oolitic limestone; some light gray, fine crystalline, porous dolomitic limestone.

5700-5710 Dolomite, light gray, very fine crystalline, with numerous calcite veinlets; pink limestone, with numerous calcite crystals and veinlets; trace white anhydrite.

5710-5730 Limestone, medium brownish-gray, very fine crystalline; light gray, very fine crystalline dolomite; trace white anhydrite.

5730-5740 No sample

5740-5775 Core #3

5775-5782 S. L. M.

5782-5792 Core #4

5792-5800 Core #5

Total Depth 5800 Drillers

Total Depth 5802 Schlumberger

SERVICE & TESTING

WORKOVER

OIL AND GAS COMMISSION
OF THE STATE OF TEXAS

Production for May, 1955 averaged 168 BOPD plus 33% water cut. Tubing was pulled to check seal ring in Baker Model "D" packer and determine if water was coming from the "C" Zone.

6-1-55: Pulled 2-1/2" tubing and dressed Baker seal nipples for Model "D" production packer. Ran tubing with Baker No-Left Latch on sub. Latch on would not catch, tubing was landed with 7000# weight on Model "D" production packer. D and B, 2-1/2" x 1-1/2" x 16" insert pump was run and seated in top of 2-1/4" liner barrel at 4928'. The following test was run:

6-10 through 6-18, 1955, averaged 130 BOPD, plus 67% water cut.

6-18-55: Pulled tubing and rods, ran Baker junk basket and gauge ring on wire line, found top of Baker Model "D" production packer at 5772.5'. Ran Baker Model "K" cast iron bridge plug on wire line set at 5754', Lane Wells measurement. One sack of cement on top of bridge plug. "C" Zone blanked off with bridge plug.

6-19-55: Dry tested bridge plug set at 5754' with Halliburton test tool packer set at 5739'. Tool open 30 minutes. Tool opened with weak bubble for 30 seconds, dead rest of the test. Picked up tubing and set packer at 5559'. Tested "B" Zone perforations at "B-1" Zone 5614'-5622', "B-2" Zone 5632'-5640'. Tool open 75 minutes, weak blow throughout test. Well flowed through casing while test tool was set, indicating leak in 5-1/2" production casing. Pressured casing while test tool was set. Pumped into leak 1 barrel in 8 minutes at 800#. Pulled test tool. Pressures on "C" Zone dry test, IDHFP=15#, FBHFP=15#, "B-1" and "B-2" test, IDHFP=458#, FBHFP=1900#, 30 minute DHSIP=2696#, Hydro=2545#. Recovered 2500' of muddy salt water.

6-20-55: Ran Baker full bore retrievable packer, found leak at 3822' RKB. Pulled tubing.

6-21-55: Ran full bore packer and retrievable bridge plug, set bridge plug at 5408', set packer at 5378'. Would not hold. Found leak in pin collar. Reran bridge plug and RT8 Baker retrievable cementer. Set bridge plug at 5524'. Packer at 5463'. Pressured to 4000#. Held 1 minute, then gave way, changed packer setting, still would not hold. Tested tubing by pumping test ball down tubing. Held 4000#. Tubing ok. Made trip and repaired bridge plug. Pack off rubber cut. Reran packer and bridge plug. Set Bridge plug at 5348', picked up one single, tested bridge plug and packer with 4000#, held 30 minutes. Spotted 5 sacks of jel, 9 barrels of slurry on top of bridge plug. Checked location of leak at 3822'.

6-22-55: Set packer below leak at 3840'. Tested 5-1/2" casing and bridge plug with 2000#, held ok. Set packer at 3810'. Broke formation with 15 barrels of salt water at 1400#, no returns through 9-5/8" casing. Squeeze #1 with 100 sacks of Slo-set cement at 1600# maximum pressure, waited 6 hours.

Workover, Continued

Squeeze #2 with 75 sacks of Slo-set cement. Maximum pressure 1800#, would not hold, waited 6 hours. Squeeze #3 with 50 sacks of Slo-set cement, maximum pressure 2200#, would not hold, waited 2 hours. Squeeze #4 with 50 sacks of Slo-set cement, maximum pressure 3000#, held, washed down to 3840' to clear cement out of pipe. Pulled up 5 std. Let set overnight.

6-23 & 6-24-55: Started in hole to wash out gel and recover bridge plug. Packer hung at 3839'. Lost lower part of RT8 Baker packer in hole. Made 2 trips with Bowen releasing spear and jars, found fish at 5408', failed to catch fish.

6-25-55: Ran bulldog spear, found fish at 5740'. Caught fish, came out with same. Made trip with retrieving head. Recovered bridge plug at 5745' PBTD.

6-26-55: Ran tubing and rods as follows:

Landed below RKB	9.80'
158 jts. of 2-7/8" tubing	4928.00'
2-1/2" x 2-1/4" x 6' stroke through barrel	6.00'
25 jts. of 2-7/8" tubing	862.20'
2-7/8" x 3' perf. nipple bull plug	3.00'
Bottom of tubing	<u>5709.00'</u>

Rods--

113 3/4" x 25' Plane rods	2825.00'
40 7/8" x 25' Plane rods	1000.00'
43 7/8" x 25' with scrapers	1075.00'
1 7/8" x 10' sub with scraper	10.00'
18' in on polish rod	<u>18.00'</u>
2-1/2" x 1-1/2" x 16' D&B brl. spaced at	4928.00'

Workover Results

Production average for July, 1955 was 119 barrels of oil per day plus 2% water cut.

RECEIVED

APR 30 1956

OIL AND GAS COMMISSION
OF THE STATE OF MONTANA

WORKOVER HISTORY NO. 2

Date November 2, 1964

Lease and Well No. East Poplar Unit Well No. 12

Field East Poplar County Roosevelt State Montana

Well Location SW SE Section 3, T28N, R51E

Status Prior to Present Job:

Date Completed December 3, 1952 Date Last Workover June 26, 1955

TD 5802' PBTD 5754' Producing Zone B-1 & B-2 Zone of Madison Formation

Perforations 5614-5622' (B-1) 5632-5640' (B-2)

Cumulative Production 490,412 BO 239,643 BW

Latest Test before Csg. Leak 190 BF, 69% water, 59 BO, 131 BW

Justification for Workover To locate and repair indicated casing leak @ 3855.40'

Summary of Workover:

- 10-8-64 PBTD 5754' Rigged up pulling unit and pulled rods and tbgs. Picked up workover string and started in hole.
- 10-9-64 PBTD 5754' Set HOWCO Retrievable B.P. @ 5000'. Tested to 2000# Held OK. Pin pointed leak at 3855.40'. Spotted 3 bbls. of gel on B.P. below leak. Broke formation down w/3500# @ 3.5 BPM. Mixed 75 sks. reg. cmt. w/.6% Halida 9 added. Staged cmt. for 3 hrs. and 5 min. Csg. leak squeezed @ 3500# and held. Released to pump truck. Pressure bled to 0 PSI ($\frac{1}{2}$ bbl. return) back to pump truck and repressured to 3500# PSI, held. Well S.I. overnite under pressure.
- 10-10-64 PBTD 5754' Drilled out 50' of hard cmt. from 3807 to 3857'. Pressure tested to 2000# PSI, held OK. Came out of hole. Picked up retrievable head and retrieved B.P.. Came out of hole laying down workover string. S.I. overnight.
- 10-11-64 Finished laying down W.O. tbgs. Ran prod. string. Started pumping at 2:30 PM. Will test when levels on fluid.
- 10-14-64 Pumping at the rate of 135 BFPD, 75% water, 34 BOPD, 101 BWPD
- 10-15-64 Pumping at the rate of 130 BFPD, 75% water, 32 BOPD, 98 BWPD

10-19-64 Pumping at the rate of 130 BFPD, 75% water, 32 BOPD, 97 BWPD

Comparison:

9-10-64	190 BF	69% water	59 BO	131 BW
10-19-64	130 BF	75% water	32 BO	97 BW
	-60	+6%	-27	-34

10-31-64 Pumping at the rate of 130 BFPD, 73% water, 35 BOPD, 95 BWPD
Workover Potential after Workover.

Recap of Workover:

1. Final Perforations: 5614-5622' (B-1) 5632-5640' (B-2). Unchanged
2. Final PBTD 5754'. Final TD 5802'. Unchanged
3. Workover Potential after Workover: 130 BFPD, 73% water, (35 BOPD, 95 BWPD)
4. Producing Zone: B-1 and B-2 Zone of Madison Formations. Unchanged

Tested flow from Csg. leak at the rate of 47 BFPD, 81% water, (9 BOPD, 38 BWPD)
Flowing on a 12/64" choke.

EAST POPLAR UNIT NO. 12

WORKOVER HISTORY NO. 3

Name and Well No.: East Poplar Unit No. 12

Field: East Poplar Unit County: Roosevelt State: Arkansas

Well Location: SW 1/4 Section 3, T28N, R51E

SUMMARY OF PRESENT JOB:

Date Completed: December 3, 1952 Date Of Last Workover: June 26, 1955

T.D.: 5682' P.E.D.: 5754' Producing Zone: B-1 & 2 Zones of Madison Formation

Perforations: 5614-5622' (B-1) 5632-5640' (B-2) Cumulative Production: B-1 &

B-2 585,809 BO 554,254 BW

Latest Test: 11/13/74 132 BFPD 28 BOPD 104 BWPD 75% W.C.

DESCRIPTION FOR WORKOVER:

A casing leak developed in this well in 1964. After the leak was repaired production dropped from 100 BFPD to 130 BFPD. By acidizing this well the fluid production should be increased to 150 BFPD. If the water cut does not increase a 12 BOED increase should be noted.

RECORD OF WORKOVER:

2-5-74 5754' P.E.D. Preparing to M.T.R.U.P.U.

3-6-74 5754' P.E.D. Preparing to acidize well.

Moved in and rigged up pulling unit. Pulled rods and tubing. Fished up 1 joint tail pipe, Model "R" packer and 3 joints of tubing. S.L. overnight.

2-7-76 5754' P.E.D. Preparing to put well on pumping

Hydrotested tubing in hole and set packer at 5681'. Filled annulus and tested to 500 PSI. held OK. Est. injection rate of 1 1/4 BPM at 1670 PSI. Acidized perforations with 750 gallons of 15% HCL, 10% V-66, corrosion inhibitor and iron sequestrating agent. Injection pressure increased from 500 PSI to 2800 PSI while acidizing at the rate of 1/2 BPM down to 1/4 BPM at the end. PSI = 2000 PSI 15 HCL = 2000 PSI, 16 % V-66, S.L. = 250 PSI. S.L. overnight after pressure

3-3-74 5754' PWD Pumping to put well to pumping.

Blow off pressure and practiced to pull tubing. Floor hand collapsed. And to S.L. overnight. Unable to get another man.

3-9-74 5754' PWD Pumping to put well to pumping.

Belled tubing and packer. Run production string. Unable to set and cement packer. Came out of hole. Left anchor on bottom. Run new Galvanneal anchor and S.L. overnight.

3-10-74 5754' PWD Pump Washing

Run rods and put well to pumping

3-11-74 5754' PWD Pump Testing

No test - Pumping 100% Water

3-12-74 5754' PWD Pump Testing

No Test - Pumping 100% Water

3-13-74 5754' PWD Pump Testing

20 Hr. Test Pumped 111 BF = 133 BWPD 11 BOPD 122 EWPD 97% BS&W

3-14-74 5754' PWD Pump Testing

No Test

3-15-74 5754' PWD Pumping

18 Hr. Test Pumped 95 BF = 126 BWPD 14 BOPD 112 EWPD 91% BS&W

3-16-74 5754' PWD Pump Washing

18 Hr. Test Pumped 98 BF = 130 BWPD 19 BOPD 111 EWPD 85% BS&W

3-17-74 5754' PWD Pump Washing

24 Hr. Test Pumped 127 BWPD 19 BOPD 108 EWPD 89% BS&W

3-18-74 5754' PWD Pump Testing

No Test

3-19-74 5754' PWD Pump Washing

6 Hr. Test Pumped 36.59 BF 146 BWPD 23 BOPD 123 EWPD 84% BS&W

3-20-74 5754' PWD Pump Testing

21 Hr. Test Pumped 135 BWPD 21 BOPD 114 EWPD 84% BS&W

3-21-74 5754' PWD Pump Washing

24 Hr. Test Pumped 134 BWPD 21 BOPD 113 EWPD 84% BS&W

3-22-74 5754' PWD Pump Washing

6 Hr. Test Pumped 39.81 BF = 135 BWPD 23 BOPD 112 EWPD 85% BS&W

Workover: Bohankial - No Drop From Report

REPORT OF WORKOVER:

1. Well Identification:

5614 - 5622' E-1 Zone
5631 - 5640' E-2 Zone

2. Well Status:

5754' Uncharged

Producing Zone:

E-1 and E-2 Uncharged

Workover Potential:

135 BOPD 23 BOPD
112 BOPD 81% PSOM

Workover Unsuccessful - Oil production decreased by 5 BOPD and the water cut increased by 4%.

EAST POPLAR UNIT NO. 12

WORKOVER HISTORY NO. 4

Lease and Well No.: East Poplar Unit No. 12

Field: East Poplar County: Roosevelt State: Montana

Well Location: SW SE Section 3, T28N, R51E

STATUS PRIOR TO PRESENT JOB:

Date Completed: December 3, 1952 Date Of Last Workover: March, 1974

T.D.: 5802' BHPD: 5754' Producing Zone: B-1 and B-2 Of Madison

Perforations: 5614-5622' and 5632-5640'

Cumulative Production: 605,145 BO 660,346 BW

Latest Test: April 11, 1976 184 BHPD 24 BOPD 160 BWPD 87% W.C.

JUSTIFICATION FOR WORKOVER:

It is proposed to set a packer below the B-2 Zone, perforate the B-4 Zone (5693-5698') together with the B-3 Zone (5655-5660') and test. Then, isolate all "B" Zone, perforate and test the A-4 Zone (5501-5503').

These zones, commingled with the presently open B-1 and 2 are expected to yield total fluid production volumes which will be excessive for the beam pumping unit now on the well. It is proposed to run a low volume test Reda (Type D20E, 94 stage powered with a 70 H.P. motor) in this well.

Expected daily production is 650 BHPD, 590 BWPD and 60 BOPD. This would give us a increase of 38 BOPD. An increase in production of 38 BOPD would pay out in approximately 3-1/2 months and yield an increased rate of return in excess of 50%.

SUMMARY OF WORKOVER:

6-29-76 Move in rig - Rig up and pull rods and tubing. (Prepare well for No. 58 Reda). Trip in hole with Johnston packer and ret. bridge plug. Tagged old tubing anchor at 5554' - pulled out of hole. Laid down packer's. Preparing to go in hole to fish anchor or work down hole.

- 6-30-76 Trip in hole with tubing opened ended - tried to screw onto tubing anchor. Unable to do so because of slip lost in hole in 1974 and fouling nipple top (3" x 2-3/8" sub looking up from anchor). Pulled out of hole - calling for mill and drill out equipment.
- 7-1-76 Trip in hole with 1 joint wash pipe, jars and milling shoe to mill out tubing anchor slips at 5554' - while milling, anchor slipped to 5700'. Tried to swallow anchor in wash pipe - pulled out of hole - did not have fish. Laid down wash pipe and shoe - picked up spear and started in hole, 1/3 way in, shut in for night.
- 7-2-76 Trip in hole with spear - could not spear into fish - pulled out hole. Trip in hole with grapple - tagged at 5650' - pulled out hole - grapple had 2-1/2" bull plug. This had prevented spear from going in anchor. Made another trip with grapple - pulled out hole with anchor - Shut in for night.
- 7-3-76 Trip in hole with Go International wireline with gauge ring to 5654' - could not go deeper - ran sinker bar to 5654'. Well records do not show restriction at this depth. Rigged down wireline - shut in for night.
- 7-4-76 Sunday - Shut Down
- 7-5-76 Holiday - Shut Down
- 7-6-76 Trip in hole with bit and scraper. Rigged up drilling head and power swivel - drilled and pushed cement plug to 5681'. Shut in for night.
- 7-7-76 Drilled and pushed cement plug to 5735'. Bit plugged. (22' of rat hole from B-4 perforations 5693-98'). Pulled out of hole - started in hole with Johnston packer and ret. bridge plug. Tools set at 1600' - shut in for night.
- 7-8-76 Released packer and pulled out hole. Run new Johnston packer and bridge plug - set at 5667'. Dry - Swabbed tested bridge plug at 5754' and cement plug pushed to 5735'. Swabbed fluid to 5400' - no entry. Went in with tubing to 5725' and set ret. bridge plug. Pulled to 5600' with packer. Rigged up Go International and perforated B-3 at 5655-5660' and B-4 at 5693-5698'. Set packer at 5673', isolating B-4 - swabbed B-4, 5 runs to 5600'. Recovered 33 barrels, 100 % water. Approximate capacity of tubing. Made two more runs - no fluid entry. Shut in for night.
- 7-9-76 Moved ret. bridge plug to 5673'. Set packer at 5643' isolating B-3 (5655-60') zone. Fluid level - 1100'. Swabbed 45 barrels fluid at 100% water cut (tubing capacity). Decreased to 97% with fluid level at 3500'. Lost swab tools in hole. Went in hole with overshot and lost second set of tools. Pulled out of hole with tubing - recovered all tools. Shut in for night.

- 7-10-76 Trip in hole with tubing - set packer at 5643'. Fluid level at 1100'. Swabbed well down to 5400'. Recovered 35 barrels fluid - 93% water cut. Making 2 runs per hour - hitting fluid at 5400'. No entry. Released crew.
- 7-11-76 Tagged fluid at 1500'. Swabbed down to 4500'. Waited 1/2 hour - fluid still at 4500'. Rigged up Dowell - Acidized with 250 gallons of RA-8 with 2 gallons A-170 inhibitor and 1 gallon W-27 demulsifier added. Pumped in formation at 3/4 BPM with 1400 PSI ISIP 1400 PSI - 15 min. SYP 600 PSI. Overflushed with 10 barrels formation fluid. Left shut in 1 hour. Started swabbing back with fluid level at surface. Swabbed down to 5400' - 4 runs per hour. Recovered tubing capacity and acid plus flush - 49 barrels and 38 barrels formation fluid - 93% water cut. Making 2 runs per hour with fluid level staying at 5400'. (Recovering approximately 2 barrels per hour.)
- 7-12-76 Sunday - Shut Down
- 7-13-76 Swabbed fluid level from 1500' to 5000', 6 swab runs, recovered 29 barrels fluid. Initial water cut - 88%. Final water cut 96%. Rigged up Dowell to acidize. Acidized B-3 perforations (5655-60') with 500 gallons 15% BDA acid with 5 gallons A-170 inhibitor and 15# L-41 iron sequestering agent added. Pumped 12 barrels acid plus 20 barrels formation water at 2-1/2 BPM and 0 PSI until caught pressure. Pumped remaining 28 barrels flush at 3/4 BPM, pressure increased from 400 PSI to 1400 PSI. ISYP 1200#, 15 minute SYP 400#. Swabbed back 125 barrels fluid, 4 runs per hour, fluid level pulled down to 5400'. Swabbed 6-1/4 hour. Initial water cut 100% - Final water cut 96%. Shut down.
- 7-14-76 Fluid level found at 1800', swabbed fluid level to 5100' in 6 runs, 4 runs per hour. Initial water cut 92%. Stopped to repair rope socket on sand line, repaired same. Started swabbing again, fluid level still at 5100', 4 runs per hour, water cut 94%. Made 6 more runs, switched to 2 runs per hour for last 7 runs. Recovered 80 barrels fluid - final water cut 94%. 24 Hour rate based on last swab runs = 140 BWPD 132 BWPD 8 BOPD.
- 7-15-76 Rigged up HOWCO to treat B-1, B-2, B-3, and B-4 with HOWCO Mod 202 as follows: (isolating each). B-1 Zone 5614-22' with 2000 gallons B-2 Zone 5632-40' with 3000 gallons - B-3 5655-60' with 2000 gallons B-4 5693-98' with 3000 gallons. Isolated B-3 with ret. bridge plug set at 5673' and packer at 5643'. Spotted 2000 gallons acid and pumped in formation at 3/4 BPM at 1250# with 1000 gallons, packer gave way. Released and re-set packer - would not hold - made trip for new packer. Set new packer above B-1 at 5570' and pressured casing with 800#, OK. Run packer to 5645' and spotted remaining 1000 gallons acid. Set packer. Pumped 500 gallons acid at 1 BPM at 1500#. Got communication to B-2 Zone.

Pulled packer above B-1 and set 5570' - pressured casing with 800#, OK. Ran packer to 5628' and spotted 3500 gallons acid to treat B-3 and B-2 together. Pumped 500 gallons acid at 3/4 BPM at 1000#. Got communication to B-1 Zone. Released and reset packer above B-1 Zone at 5575' and pressured casing with 800#, OK. Spotted remaining acid for B-1, B-2, and B-3 (3000 gallons) and pumped in formation as follows:

BPM	T.P.	Time	Csg.	Bbls.
1.3	700	5:15	800	Start
3.4	1000	6:30	800	15
1.8	1000	6:35	800	24.5 in
1.25	1500	6:45	800	48
0.95	1500	7:15	800	75
1	1500	7:25	800	85
1.2	1500	8:00	800	119 in

All acid in formation-starting overflush (20 barrels formation water).
 1 1500 8:10 800

XSYP - 1450# 5 Min. SYP 1250# 1 Hour SYP 900 10 Hr. SYP 0#

7-16-76 Released packer at 5575'. Went in hole and released ret. bridge plug at 5673' - let bridge plug hang free on packer and set packer at 5685' to acidize B-4 Zone 5693-98' with 3000 gallons Mod 20% acid. Spotted acid and started treatment.

T.P.	Gal. In	Time	Remarks
1000#	None	30 Min.	
1500#	None	30 Min.	
2000#	None	30 Min.	
2500#	50 Gal.	1 Hour	No Break
2750#	100 Gal.	2 Hours	No Break
3000#		10 Min.	
2800#	350 Gal.		
3000#		10 Min.	
2800#			
3000#		10 Min.	
2800#			

Above for 3 hours - moved 350 gallons acid
 No pressure break-developed tubing leak. Reversed out 2500 gallons acid.
 Pulled out of hole looking for tubing leak. Did not find leak - shut in for night.

7-17-76 Riggd up hydro test, tested tubing to 5000#. Found 1 joint leaking at 3000' approximately. Ran H0%CO R-4 packer, set packer at 5585', started swabbing. Swabbed 8 hours, recovered 256 barrels fluid, 100% water cut, acid water and flush water.

7-18-76 Swabbed 10-1/2 hours, 3-1/2 runs per hour, 351 barrels, 94% water ~~car~~.
Static fluid level 800'. Swabbing fluid level 3500'. Pulling swab
from 5000'. Still getting acid water and gas

7-19-76 Sunday - Shut In

7-20-76 Swabbed 11 hours, recovered 349 barrels fluid, fluid level at 3500',
water cut ranged between 92% and 96%, last 2 runs water was 75% and
88%. Fluid level was at surface with 500# on casing.

7-21-76 Static fluid level at 1500' with 100# tubing pressure. Swabbed 4 hours,
Recovered 128 barrels fluid, water cut 96%. Swabbing fluid level 3500',
rigged down pulling unit. 24 Hr. basis 768 BFPD 691 BWPD 77 EOPD.

7-22-76 Shut In - Waiting on Reda equipment.

7-23-76 Shut In - Waiting on Reda equipment.

7-24-76 Shut In - Waiting on Reda equipment.

7-25-76 Shut In - Waiting on Reda equipment.

7-26-76 Shut In - Waiting on Reda equipment.

7-27-76 Shut In - Waiting on Reda equipment.

7-28-76 Shut In - Waiting on Reda equipment.

7-29-76 Moving in rig to run Reda pump. Pump zones B-1, 2, 3 and 4 co-mingled.
Will set Reda at 5400'.

7-30-76 Pulled out of hole with tubing and KOWCO R-4 production packer.

7-31-76 Rig up Reda pump, start in hole, made 2 cable repairs, shut down.

8-1-76 Finished running in hole, hooked up wellhead, started unit, running
OK. 30 Amps Rigged down pulling unit.

8-2-76 Pumping Tested at the rate of 682 BFPD 641 BWPD 41 EOPD (flush test)

8-3-76 Pumping at the rate of 675 BFPD 641 BWPD 34 EOPD 95% W.C. 28 Amps.

8-4-76 Pumping at the rate of 672 BFPD 591 BWPD 81 EOPD 88% W.C. 28 Amps.
Pump had shut down 8 hours out of 24 hours prior to test. Was down
1 hour shortly before test.

8-5-76 No Test - Working on problem as to why well is shutting down.

8-6-76 No Test - Shut down overnight, casing open to atmosphere, to start
up this morning.

8-7-76 Well pumping off - No Test

8-8-76 Well Pumping Off - No Test

8-9-76 Well Pumping Off - No Test

8-10-76 Pulled out of hole with Rada equipment, preparing to put well back to rod pump.

8-11-76 Laid down Rada equipment - Went in hole with tubing to 5000'. Picked up 2-1/2" x 2" x 16' insert pump. Went in hole with rods, rigged down pulling unit, transformers changed out, waiting on electrician.

8-12-76 Pumping - No Test

8-13-76 Pumping - No Test

8-14-76 Pumping - No Test

8-15-76 Pumping - No Test

8-16-76 Pumping at the rate of 268 BFPD 241 BWPD 27 BOPD 90% W.C.

8-17-76 Pumping at the rate of 268 BFPD 241 BWPD 27 BOPD 90% W.C.

8-18-76 Pumping at the rate of 268 BFPD 241 BWPD 27 BOPD 90% W.C.

8-19-76 Pumping at the rate of 268 BFPD 241 BWPD 27 BOPD 90% W.C.

8-20-76 Pumping at the rate of 268 BFPD 241 BWPD 27 BOPD 90% W.C.

8-21-76 Pumping at the rate of 268 BFPD 241 BWPD 27 BOPD 90% W.C.

8-22-76 Pumping at the rate of 268 BFPD 241 BWPD 27 BOPD 90% W.C.

8-23-76 Pumping at the rate of 268 BFPD 241 BWPD 27 BOPD 90% W.C.

8-24-76 Pumping at the rate of 268 BFPD 240 BWPD 28 BOPD 90% W.C.

8-25-76 Pumping at the rate of 265 BFPD 238 BWPD 27 BOPD 90% W.C.

8-26-76 Pumping at the rate of 265 BFPD 238 BWPD 27 BOPD 90% W.C.

8-27-76 Pumping at the rate of 260 BFPD 234 BWPD 26 BOPD 90% W.C.

8-28-76 Pumping at the rate of 260 BFPD 234 BWPD 26 BOPD 90% W.C.

8-29-76 Pumping at the rate of 260 BFPD 234 BWPD 26 BOPD 90% W.C.

8-30-76	Pumping at the rate of 260 BFPD	234 BWPD	26 BOPD	90% W.C.
8-31-76	Pumping at the rate of 260 BFPD	234 BWPD	26 BOPD	90% W.C.
9-1-76	Pumping at the rate of 260 BFPD	234 BWPD	26 BOPD	90% W.C.
9-2-76	Pumping at the rate of 260 BFPD	234 BWPD	26 BOPD	90% W.C.
9-3-76	Pumping at the rate of 260 BFPD 234 BWPD 26 BOPD 90% W.C. Moved in and Rigged up pulling unit. Changed pump from 2-1/2" x 2" to 2-1/2" x 2-1/4". Pulled up hole from 5554' to 3800'. Pump testing the B-1, 2, 3, and 4 Zones.			
9-4-76	Pumping at the rate of 260 BFPD	234 BWPD	26 BOPD	90% W.C.
9-5-76	Pumping at the rate of 260 BFPD	234 BWPD	26 BOPD	90% W.C.
9-6-76	Pumping at the rate of 260 BFPD	234 BWPD	26 BOPD	90% W.C.
9-7-76	Pumping at the rate of 260 BFPD	234 BWPD	26 BOPD	90% W.C.
9-8-76	Pumping at the rate of 314 BFPD	280 BWPD	34 BOPD	89% W.C.
9-9-76	Pumping at the rate of 315 BFPD	280 BWPD	35 BOPD	89% W.C.
9-10-76	Pumping at the rate of 315 BFPD	280 BWPD	35 BOPD	89% W.C.
9-11-76	Pumping at the rate of 284 BFPD	250 BWPD	34 BOPD	88% W.C.
9-12-76	Pumping at the rate of 284 BFPD	250 BWPD	34 BOPD	88% W.C.
9-13-76	Pumping at the rate of 284 BFPD	250 BWPD	34 BOPD	88% W.C.
9-14-76	Pumping at the rate of 285 BFPD	250 BWPD	35 BOPD	88% W.C.
9-15-76	Pumping at the rate of 285 BFPD	250 BWPD	35 BOPD	88% W.C.
9-16-76	Pumping at the rate of 285 BFPD 250 BWPD 35 BOPD 88% W.C. To Drop From Report - Workover Potential			

RECAP OF WORKOVER:

Final Perforations:

B-1 5614-5622' Unchanged
B-2 5632-5698' Unchanged
B-3 5655-5660'
B-4 5693-5698'

Final PBED:

5754' Unchanged

Workover Potential:

285 BFPD 250 BFPD 35 EOPD 88% W.C.

Geologic Name Of Producing Zone:

B-1, 2, 3, and 4 Zones of Madison

Results Of Workover:

Oil production was increased by 10 EOPD
and the water cut was increased by 1%.

March 3, 1983

E.P.U. # 12

MIRUPU, couldn't unseat 2" rod pump, tried to back off rods, twisted 3/4" rod off 6 rods above pump.

Tried to release anchor, and couldn't, pulled up to 75,000#, sheared anchor, still wouldn't release, tubing would turn to the right with little torque, jarred up and down on the tubing, but wouldn't come loose.

Picked up National insert pump, anchor and ran on the bottom of the 2" insert pump.

Ran rods and hung on.

CORE ANALYSIS REPORT
FOR
MURPHY CORPORATION

EAST POPLAR UNIT NO. 12 WELL
EAST POPLAR FIELD
ROOSEVELT COUNTY, MONTANA

CORE

CORE LABORATORIES, INC.

Petroleum Reservoir Engineering
DALLAS, TEXAS

December 12, 1952

Murphy Corporation
1125 University Building
Denver, Colorado

Attention: Mr. Gordon Kirby

Subject: Special Core Analysis
East Poplar Unit No. 12 Well
East Poplar Field
Roosevelt County, Montana

Gentlemen:

Diamond conventional cores from the Madison formation in the subject well have been sampled and quick-frozen by a representative of Core Laboratories, Inc. and later analyzed in our Williston, North Dakota laboratory. Results of the analysis are presented in tabular and graphical form on the attached Special Analysis Core Report. Water base mud was used as the drilling fluid.

Madison formation analyzed from 5483 to 5506 feet is interpreted to be essentially low capacity oil productive.

Formation analyzed from 5616 to 5637.6 feet is interpreted to be oil productive. Formation from 5637.6 to 5644 feet is characterized by consistently high water saturations and should give a high degree of water cut.

Formation analyzed from 5792 to 5801 feet is interpreted to be essentially oil productive.

Recovery estimates for the zones, 5617 to 5637.6 and 5792 to 5801 feet, are given on page one.

We hope these data prove beneficial in the evaluation of this well.

Very truly yours,

Core Laboratories, Inc.

J. D. Harris (JCH)

J. D. Harris,
District Engineer

JDH:ma

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS

Page 1 of 1
 File FL 25-303 S
 Well East Poplar Unit No. 1

CORE SUMMARY AND CALCULATED RECOVERABLE OIL

CORE SUMMARY

FORMATION NAME	Madison	Madison		
DEPTH, FEET	5617.0-5637.6	5792.0-5801.0		
% CORE RECOVERY	100	100		
FEET OF PERMEABLE, PRODUCTIVE FORMATION RECOVERED	12.6	9.0		
AVERAGE PERMEABILITY MILLIDARCS	Max.: 5.1 90°: 2.9	Max.: 0.3 90°: 0.05		
CAPACITY — AVERAGE PERMEABILITY X FEET PRODUCTIVE FORMATION	Max.: 64 90°: 37	Max.: 2.7 90°: 0.45		
AVERAGE POROSITY, PERCENT	11.2	9.9		
AVERAGE RESIDUAL OIL SATURATION, % PORE SPACE	16.2	13.8		
GRAVITY OF OIL, A.P.I.	39	39		
AVERAGE TOTAL WATER SATURATION, % PORE SPACE	36.3	41.2		
AVERAGE CALCULATED CONNATE WATER SATURATION, % PORE SPACE	36.3	41.2		
SOLUTION GAS-OIL RATIO, CUBIC FEET PER BARREL (1)	660	660		
FORMATION VOLUME FACTOR—VOLUME THAT ONE BARREL OF STOCK TANK OIL OCCUPIES IN RESERVOIR (1)	1.38	1.38		

CALCULATED RECOVERABLE OIL

{ Prediction dependent upon complete isolation of each division. Structural position of well, total permeable thickness of oil zone and drainage area of well should be considered.

BY NATURAL OR GAS EXPANSION, BBLs. PER ACRE FOOT (2)	89	71		
INCREASE DUE TO WATER DRIVE, BBLs. PER ACRE FOOT	171	150		
TOTAL AFTER COMPLETE WATER DRIVE, BBLs. PER ACRE FOOT (3)	260	221		

Core Laboratories, Inc.

J. D. Harris
 J. D. Harris

NOTE:

- (*) REFER TO ATTACHED LETTER.
- (1) REDUCTION IN PRESSURE FROM estimated SATURATION PRESSURE TO ATMOSPHERIC PRESSURE.
- (2) AFTER REDUCTION FROM ORIGINAL RESERVOIR PRESSURE TO ZERO POUNDS PER SQUARE INCH.
- (3) RESERVOIR PRESSURE MAINTAINED BY WATER DRIVE AT OR ABOVE estimated ORIGINAL SATURATION PRESSURE.
- (4) NO ESTIMATE FOR GAS PHASE RESERVOIRS.

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees assume no responsibility and make no warranty or representation, as to the productivity, proper operation, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

DOV'ELL

DIVISION OF THE DOW CHEMICAL COMPANY

CUSTOMER

SERVICE AND
INVOICE NUMBER

TERMS: DUE END OF MONTH
FOLLOWING MONTH OF SALE.

**{ Please indicate on all remittances
{ and send to: P.O. BOX 21
TULSA, OKLAHOMA 74102**

SERVICE ORDER RECEIPT

DATE	CUSTOMER ORDER NO.	SHIPPED VIA	SERVICE FROM DOWELL DISTRICT	OUTPOST

WELL NAME AND NUMBER 100-23	LOCATION AND POOL 100-23	SERVICE ORDER IMPORTANT: SEE OTHER SIDE FOR TERMS & CONDITIONS
--------------------------------	-----------------------------	-------------------------------------------------------------------

COUNTY, CITY (IF WITHIN CITY LIMITS) & STATE	TYPE OF SERVICE	I have read, understood and agreed to the terms & conditions printed on the reverse side hereof and represent that I have full authority to accept same
----------------------------------------------	-----------------	---------------------------------------------------------------------------------------------------------------------------------------------------------

CUSTOMER'S _____ and sign this order.
 BY _____ CUSTOMER

NAME		AUTHORIZED AGENT
ADDRESS		0809768488897897238254857588788888888887 03156268488897897238254857588788888888887

CITY, STATE & ZIP CODE _____

ZIP CODE

SERVICE INSTRUCTIONS:

[illegible]

**THIS IS
NOT AN
INVOICE**

SERVICE ORDER

IMPORTANT: SEE OTHER SIDE FOR TERMS & CONDITIONS

I have read, understood and agreed to the terms & conditions printed on the reverse side hereof and represent that I have full authority to accept same and sign this order.

CUSTOMER
BY

AUTHORIZED AGENT

DOWELL REPRESENTATIVE

PAYROLL INIT.

RECEIPT: THE UNDERSIGNED HEREBY CERTIFIES THAT THE MATERIALS AND EQUIPMENT LISTED ABOVE WERE RECEIVED AND THE SERVICES WERE PERFORMED IN A WORKMANLIKE MANNER.

CUSTOMER	
----------	--

BY

AUTHORIZED AGENT

WELL TREATMENT REPORT

DWL-494-L PRINTED IN U.S.A.

WELL DIVISION

CHEMICAL COMPANY

DATE

7-12-76

WELL NAME AND NUMBER

EPU #12

LOCATION

CUSTOMER REPRESENTATIVE

Mr. Huff

TREATMENT NUMBER

15-05-9863

POOL

FORMATION

MADISON

TUBING

JOB DONE

CASING

ANNULUS

TBG: 1500

ALLOWABLE PRESSURE

COUNTY

Roosevelt

STATE

Mont.

TYPE OF SERVICE

☒ Acidizing☐ Sand Control☐ Fracturing☐ Other

SERVICE NAME

Ridgely

TYPE OF WELL

OIL

GAS

WATER

NEW WELL

AGE OF WELL

REWORK

TOTAL DEPTH

5754

STATIC BHT.

CASING SIZE

5 1/2

CASING DEPTH

5754

TUBING SIZE

2 7/8

TUBING DEPTH

5645

LINER SIZE

LINER

TOP-BOTTOM

Bottom

PACKER TYPE

5645

PACKER DEPTH

5645

OPEN HOLE

CASING VOL.

TUBING VOL.

33.7

ANNULAR VOL.

PERFORATED INTERVALS

TOP	TO	BOTTOM	NO. OF HOLES	TOP	TO	BOTTOM	NO. OF HOLES
5655	TO	60	21		TO		
	TO				TO		
	TO				TO		
	TO				TO		

FOR CONVERSION PURPOSES 24 BBLs EQUALS 1000 GALLONS

ARRIVED ON LOCATION: 10:00

LEFT LOCATION:

DIAMETER OF PERFORATIONS =

TIME	INJECTION RECORD						PRESSURE		NOTATIONS
	LIQUID RATE BPM	TYPE OF FLUID	STAGE VOL. BBLs	CUM. VOL. BBLs	PROP. TYPE	PROP. #/GAL	CSG	TBG	
									Pre-Job Pressure Test
10:10									Rig up Safety Meeting
10:54	2 1/2	Acid	0	0	-	-	300	0	Start Acid
10:59	2 1/2	Acid - WATER	12	12	-	-	300	0	Acid in tube. Start flush
11:09	2 1/2	WATER	20	32	-	-	500	0	Acid on spot
11:11	1 3/4	WATER	23	35	-	-	300	400	Caught Pressure
11:24	3 3/4	WATER	43	55	-	-	500	1400	Slow rate to 3/4 BPM 1250 PSI
11:29	3/4	WATER	48	60	-	-	300	1300	Flush + 16 BBLs of flush comp.
									I > IP 1300
									15 min. 400

FRAC. GRADIENT

AVG. INJECTION RATES

LIQ. 1.4 BPM

W/DROP

TREATING PRESSURE SUMMARY

TOTAL FLUID

60 BBLs

TOTAL PROP

LBS

OTHER MATERIALS INJECTED

MAX. 1400

FINAL 1300

AVG. 1300

IMMED. SIP 1200

15 MIN. SIP 400

PRODUCTION PRIOR TO THIS TR.

☐ Test☐ Stabilized

DOWELL LOCATION

Williston, N.D.

DOWELL TREATMENT SUPERVISOR

C. T. Hartman

DOV'ELL

Div:-

THE DOW CHEMICAL COMPANY

CUSTOMER

SERVICE AND
INVOICE NUMBER

Please indicate on all instances

and send to: P.O. BOX 21

SERVICE ORDER RECEIPT

TERMS: ONE END OF MONTH
FOLLOWING MONTH OF SALE.

TULSA, OKLAHOMA 74102

DATE 10/10/74	CUSTOMER ORDER NO. 1000	SHIPPED VIA AIR	SERVICE FROM DOWELL DISTRICT 1000	OUTPOST 1000
------------------	----------------------------	--------------------	--------------------------------------	-----------------

WELL NAME AND NUMBER	LOCATION AND POOL	SERVICE ORDER IMPORTANT: SEE OTHER SIDE FOR TERMS & CONDITIONS I have read, understood and agreed to the terms & conditions printed on the reverse side hereof and represent that I have full authority to accept same
COUNTY, CITY (IF WITHIN CITY LIMITS) & STATE	TYPE OF SERVICE	

CUSTOMER'S NAME _____ ADDRESS _____ CITY, STATE & ZIP CODE _____		and sign this order. CUSTOMER BY _____ AUTHORIZED AGENT _____
------------------------------------------------------------------------	--	---------------------------------------------------------------------

SERVICE INSTRUCTIONS:

[illegible]

THIS IS
NOT AN
INVOICE

SERVICE ORDER

IMPORTANT; SEE OTHER SIDE FOR TERMS & CONDITIONS

I have read, understood and agreed to the terms & conditions printed on the reverse side hereof and represent that I have full authority to accept same and sign this order.

CUSTOMER
BY _____

AUTHORIZED AGENT

COWELL REPRESENTATIVE

PAYROLL INIT.

RECEIPT: THE UNDERSIGNED HEREBY CERTIFIES THAT THE MATERIALS AND EQUIPMENT LISTED ABOVE WERE RECEIVED AND THE SERVICES WERE PERFORMED IN A WORKMANLIKE MANNER.

CUSTOMER	
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BY

AUTHORIZED AGENT

TREATMENT NO. 212

DISTRICT Denver STATION Williston DATE 10-12, 1953

STATION OR DISTRICT MANAGER

DOWELL INCORPORATED

TREATMENT REPORT

TREATMENT NO.

DISTRICT Denver #15 STATION Williston DATE 10-10, 1953

OWNER Murphy Corporation LEASE East Poplar Unit WELL NO. 12
POOL East Poplar COUNTY Roosevelt STATE Montana
LOCATION _____ OWNER'S REPRESENTATIVE _____

WELL DATA

FORMATION Charles
PAY-FROM _____ TO _____
PRESENT TOTAL DEPTH _____ P. B. FROM _____

PIPE DATA—

CASING SIZE 5, 5 WT. 15
CASING DEPTH _____ SKS. CEMENT _____
LINER SIZE _____ WT. _____
LINER DEPTH-FROM _____ TO _____
LINER DESCRIPTION _____
TUBING SIZE 2" EUE DEPTH _____
PACKER-TYPE _____ DEPTH _____
PACKER FURNISHED BY OPERATOR _____ DOWELL _____

COMPLETION DATA-

DATE _____ CABLE TOOL _____
 ROTARY _____ DRILLING FLUID _____
 SIZE OPEN HOLE _____

PERFORATING DATA OR PAY ZONES

SHOTS/FT.	FROM	TO

PRODUCTION—

	OIL	WATER	G. O. R.
INITIAL	_____	_____	_____
PRESENT	_____	_____	_____

ACIDIZING, SHOOTING AND LOGGING RECORD—

the choke at

DETAILED RECORD OF TREATMENT

TIME		PRESSURE		REMARKS
A.M.	P.M.	CASINO	TUBING	
9:00				ARRIVAL AT LOCATION WITH GREY DOWELL UNIT #5283
9:30				Start to circulate 195
				661 salt water to kill well
11:30				well circulated

[illegible]**LEFT LOCATION**

IF TREATMENT IS NOT CONVENTIONAL LIMESTONE FORMATION TREATMENT TO INCREASE OIL OR GAS PRODUCTION, STATE PURPOSE OF TREATMENT.

LY Volke

SERVICE ENGINEER

GENERAL OFFICE COPY.

STATION OR DISTRICT MANAGER

HALLIBURTON SERVICES

JOB SUMMARY

FORM 2012-R-1

HALLIBURTON

DIVISION

DENVER, COLO

HALLIBURTON

LOCATION

Glendive Mo

BILLED ON
TICKET NO. 814995

WELL DATA

WELL: E. Poplar SEC: 3 TWP: 28N RNG: 51E COUNTY: Roosevelt STATE: Mont

FORMATION NAME: _____ TYPE: _____

FORMATION THICKNESS: _____ FROM: _____ TO: _____

INITIAL PROD: OIL _____ BPD. WATER _____ BPD. GAS _____ MCFD _____

PRESENT PROD: OIL _____ BPD. WATER _____ BPD. GAS _____ MCFD _____

COMPLETION DATE: 10-15-52 MUD TYPE: _____ MUD WT.: _____

ACKER TYPE: Johnston SET AT: _____

BOTTOM HOLE TEMP: 240° PRESSURE: _____

MISC. DATA: _____

	NEW USED	SIZE	FROM	TO	WEIGHT	MAXIMUM PSI ALLOWABLE
CASING	U	5 1/2	KB	5754	15.50	PBFA
LINER						
TUBING	U	3 1/2	KB			
OPEN HOLE	Perfs:	5655	5660			DEPTH:
PERFORATIONS		5693	5698			SHOTS/FT.
PERFORATIONS		5632	5640			SHOTS/FT.
PERFORATIONS		5614	5622			SHOTS/FT.

JOB DATA

CALLER OUT	ON LOCATION	JOB STARTED	JOB COMPLETED
DATE: <u>7-14</u>	DATE: <u>7-14</u>	DATE: <u>7-14</u>	DATE: <u>7-15</u>
TIME: <u>0200</u>	TIME: <u>0630</u>	TIME: <u>0748</u>	TIME: <u>1900</u>

PERSONNEL AND SERVICE UNITS

NAME	UNIT NO. & TYPE	LOCATION
<u>Brophy</u>	<u>3903</u>	<u>Glendive</u>
<u>Detmers</u>	<u>73 TA</u>	<u>Glendive</u>
<u>Nystad</u>	<u>Acid</u>	<u>Glendive</u>
<u>Butler</u>	<u>Acid</u>	<u>Glendive</u>

TOOLS AND ACCESSORIES

TYPE AND SIZE	QTY.	MAKE
LOAD COLLAR		
LOAD SHOE		
GUIDE SHOE		
CENTRALIZERS		
BOTTOM PLUG		
OP PLUG		
HEAD		
ACKER		
OTHER		

MATERIALS

REAT. FLUID _____ DENSITY _____ LB./GAL. API _____

ISPL. FLUID _____ DENSITY _____ LB./GAL. API _____

ROP. TYPE _____ SIZE _____ LB. _____

ROP. TYPE _____ SIZE _____ LB. _____

CID TYPE 10,000 GAL. MOD 202

CID TYPE _____ GAL. _____

CID TYPE _____ GAL. _____

URFACANT TYPE _____ GAL. _____ IN _____

IE AGENT TYPE 4 GAL. 3N IN P/1000

UID LOSS ADD. TYPE _____ GAL.-LB. _____ IN _____

ELLING AGENT TYPE _____ GAL.-LB. _____ IN _____

RIC. RED. AGENT TYPE _____ GAL.-LB. _____ IN _____

REAKER TYPE _____ GAL.-LB. _____ IN _____

LOCKING AGENT TYPE _____ GAL.-LB. _____

DEPARTMENT: Cement

DESCRIPTION OF JOB: 10,000 gal MOD 202
Acid, 4 zones

JOB DONE THRU: TUBING ☒ CASING ☐ ANNULUS ☐ TSG./ARR. ☐

CUSTOMER REPRESENTATIVE: X John Brophy

CEMENT DATA

STAGE	NUMBER OF SACKS	TYPE	API CLASS	BRAND	BULK SACKED	ADDITIVES	YIELD CU.FT./SK.	MIXED LBS./GAL.

PRESSURES IN PSI

SUMMARY

VOLUMES

INCULATING _____ DISPLACEMENT _____

REAKDOWN _____ MAXIMUM _____

VERAGE _____ FRACTURE GRADIENT _____

UT-IN: INSTANT _____ 5-MIN. _____ 15-MIN. _____

HYDRAULIC HORSEPOWER _____

ORDERED _____ AVAILABLE _____ USED _____

AVERAGE RATES IN BPM _____

REATING _____ DIED _____ OVERALL _____

CEMENT LEFT IN PIPE _____

REASON _____

PREFLUSH: BBL.-GAL. _____ TYPE _____

LOAD & BKDN: BBL.-GAL. _____ PAD: BBL.-GAL. _____

TREATMENT: BBL.-GAL. _____ DISPL: BBL.-GAL. _____

CEMENT SLURRY: BBL.-GAL. _____

TOTAL VOLUME: BBL.-GAL. _____

REMARKS: Check Log

CUSTOMER

CUSTOMER: Brophy Oil Corp
LEASE: EP-4
WELL NO.: 412
JOB TYPE: Acid
DATE: 7-14-76



WORK ORDER CONTRACT AND PRE-TREATMENT DATA

FORM 1908 R-2

A Division of Halliburton Company
DUNCAN, OKLAHOMA 73112

ATTACH TO INVOICE & TICKET NO. 814945

DISTRICT Glendive, Mont

DATE 7-14-76

TO: HALLIBURTON SERVICES. YOU ARE HEREBY REQUESTED TO FURNISH EQUIPMENT AND SERVICEMEN TO DELIVER AND OPERATE THE SAME AS AN INDEPENDENT CONTRACTOR TO: Murphy Oil Corp (CUSTOMER) AND DELIVER AND SELL PRODUCTS, SUPPLIES, AND MATERIALS FOR THE PURPOSE OF SERVICING

WELL NO. 12 LEASE E.D.U. SEC. 3 TWP. 28N RANGE 51E
FIELD E. Poplar COUNTY Roosevelt STATE Mont OWNED BY Murphy Oil Corp

THE FOLLOWING INFORMATION WAS FURNISHED BY THE CUSTOMER OR HIS AGENT

FORMATION NAME MADISON TYPE _____
FORMATION THICKNESS _____ FROM _____ TO _____
PACKER: TYPE Johnston SET AT _____
TOTAL DEPTH _____ MUD WEIGHT _____
BORE HOLE _____
INITIAL PROD: OIL _____ BPD, H₂O _____ BPD, GAS _____ MCF
PRESENT PROD: OIL _____ BPD, H₂O _____ BPD, GAS _____ MCF

	NEW USED	WEIGHT	SIZE	FROM	TO	MAX. ALLOW. P.S.I.
CASING	<u>U</u>	<u>15.50</u>	<u>5 1/2</u>	<u>KB</u>	<u>5754'</u>	<u>PBTD</u>
LINER						
TUBING	<u>U</u>	<u>6.5</u>	<u>2 1/2</u>	<u>KB</u>		
OPEN HOLE	<u>Perforations</u>		<u>1st</u>	<u>5655</u>	<u>5660</u>	SHOTS/FT.
PERFORATIONS	"		<u>2nd</u>	<u>5693</u>	<u>5698</u>	
PERFORATIONS	"		<u>3rd</u>	<u>5632</u>	<u>5640</u>	
PERFORATIONS	"		<u>4th</u>	<u>5614</u>	<u>5622</u>	

PREVIOUS TREATMENT: DATE _____ TYPE _____ MATERIALS _____
TREATMENT INSTRUCTIONS: TREAT THRU TUBING ☒ ANNULUS ☐ CASING ☐ TUBING/ANNULUS ☐ HYDRAULIC HORSEPOWER ORDERED _____

10,000 gal MOD 202 ACID JOB
RUN IN 4 ZONES - B-3 2000 gal
B-4 3000 gal, B-2 3000 gal B-1 2000 gal

CUSTOMER OR HIS AGENT STATES THE WELL IS IN PROPER CONDITION TO RECEIVE THE PRODUCTS, SUPPLIES, MATERIALS, AND SERVICES
THIS CONTRACT MUST BE SIGNED BEFORE WORK IS COMMENCED

As consideration, the above-named Customer agrees:

- To pay Halliburton in accord with the rates and terms stated in Halliburton's current price lists.
- Halliburton shall not be responsible for and Customer shall secure Halliburton against any liability for damage to property of Customer and of the well owner (if different from Customer), unless caused by the willful misconduct or gross negligence of Halliburton, this provision applying to but not limited to subsurface damage and surface damage arising from subsurface damage.
- Customer shall be responsible for and secure Halliburton against any liability for reservoir loss or damage, or property damage resulting from subsurface pressure, losing control of the well and/or a well blowout, unless such loss or damage is caused by the willful misconduct or gross negligence of Halliburton.
- Customer shall be responsible for and secure Halliburton against any and all liability of whatsoever nature for damages as a result of subsurface trespass, or an action in the nature thereof, arising from a service operation performed by Halliburton hereunder.
- Customer shall be responsible for and secure Halliburton against any liability for injury to or death of persons, other than employees of Halliburton, or damage to property (including, but not limited to, injury to the well), or any damages whatsoever, irrespective of cause, growing out of or in any way connected with the use of radioactive material in the well hole, unless such damage shall be caused by the willful misconduct or gross negligence of Halliburton.
- Halliburton makes no guarantee of the effectiveness of the products, supplies or materials, nor of the results of any treatment or service.
- Customer shall, at its risk and expense, attempt to recover any Halliburton equipment, tools or instruments which are lost in the well and if such equipment tools or instruments are not recovered, Customer shall pay Halliburton its replacement cost unless such loss is due to the sole negligence of Halliburton. If Halliburton equipment, tools or instruments are damaged in the well, Customer shall pay Halliburton the lesser of its replacement cost or the cost of repairs unless such damage is caused by the sole negligence of Halliburton. In the case of equipment, tools or instruments for marine operations, Customer shall, in addition to the foregoing, be fully responsible for loss of or damage to any of Halliburton's equipment, tools or instruments which occurs at any time after delivery to Customer at the landing until returned to the landing, unless such loss or damage is caused by the sole negligence of Halliburton.
- Because of the uncertainty of variable well conditions and the necessity of relying on facts and supporting services furnished by others, Halliburton is unable to guarantee the accuracy of any chart interpretation, research analysis, job recommendation or other data furnished by Halliburton. Halliburton personnel will use their best efforts in gathering such information and their best judgment in interpreting it, but Customer agrees that Halliburton shall not be responsible for any damages arising from the use of such information except where due to Halliburton's gross negligence or willful misconduct in the preparation or furnishing of it.
- Halliburton warrants only title to the products, supplies and materials and that the same are free from defects in workmanship and materials. THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE WHICH EXTEND BEYOND THOSE STATED IN THE IMMEDIATELY PRECEDING SENTENCE. Halliburton's liability and Customer's exclusive remedy in any cause of action (whether in contract, tort, breach of warranty or otherwise) arising out of the sale or use of any products, supplies or materials is expressly limited to the replacement of such products, supplies or materials on their return to Halliburton or, at Halliburton's option, to the allowance to the Customer of credit for the cost of such items. In no event shall Halliburton be liable for special, incidental, indirect, punitive or consequential damages.
- Upon Customer's default in the payment of Customer's account 60 days after date of invoice, such account will thereafter be subject to interest until paid. In the event it becomes necessary to employ an attorney to enforce collection of such account, Customer agrees to pay all collection costs and attorney fees in the amount of 20 per cent of the amount of the unpaid account.
- Halliburton shall not be bound by any changes or modifications in this contract, except where such change or modification is made in writing by a duly authorized executive officer of Halliburton.

I HAVE READ AND UNDERSTAND THIS CONTRACT AND REPRESENT THAT I AM AUTHORIZED TO SIGN THE SAME AS CUSTOMER'S AGENT

SIGNED _____

CUSTOMER

DATE 7-14-76

TIME 0730 A.M. P.M.

We certify that the Fair Labor Standards Act of 1938, as amended, has been complied with in the production of goods and/or with respect to services furnished under this contract.

CUSTOMER

JOB LOG

TICKET NO. 81495CU: ERMurphy Oil CorpPAGE NO. 4JOB TYPE AcidDATE 7-15-76

FORM 2013 R-1

CHART NO.	TIME	RATE (OPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
								3rd Zone
								Packer @ 5675'
								Perfs @ 5692'-5694'
								3000 gal 1700 502
	1020	2						Start Acid (Pump to Tail end)
	1038		33.4			300		Acid @ Tail Tail Seal Packer
	1047					1000		Pump Acid to Perfs, 1 p
	1052					1500		" " " " No p
	1056					1750		" " " " No p
	1059					2000		" " " " No p
	1134					2250		" " " " No p
	1154					2500		" " " " No p
	1223					2750		" " " " No p
	1227					3000		" " " " No p
	1233		34.8			3050		Increase Press: Tail, etc
	1250	1.2				-12		Something broke, sl to the Acid
	1430	2	40			250		Rev out Acid,
	1500							Wait on orders
	1900							Thru F/ 7-15-76

CUSTOMER

CUSTOMER

HALLIBURTON SERVICES

JOB LOG

TICKET NO. 814995

CUSTOMER Murphy PAGE NO. 2

JOB TYPE Acid DATE 7-14-76

FORM 2015 R-1

CHART NO.	TIME	RATE (OPM)	VOLUME (BDL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	1502	1/4	1/2				900	Pull Tools Set Packer @ 5580' Test Ann To 900 PSI
								Holding OK Rel. Ann.
	1541	1.3			1			Circ Down Ann To get B. Plug
	1551		18.0		1			Shut Down
								B-2 - 3000 gal
								Packer @ 5628'
								B. Plug @ 5673'
								Perfs @ 5632' 5640'
-	1657	2.0		1		250		Start Acid Pump To Packer
	1710	32.4	2.4	1				Set Packer, Pump Acid To Packer
	1712	34.0	34.0	1		500		Acid @ Perfs
✓	1717	1.3	6.5	1		700		Let BBLs Acid In Shut Down
								Move Packer Down while
	1727	1.8				500		Pump Acid Into Perm.
	1730		10.0					Shut Down 10 BBLs Acid In
								Perm. Move Packer To 5590'
								Acidize B-1 & B-2 & B-3 Zones
								With 5000 gal. (Additional - 2000 gal)
								Perfs 5614' 5622' 5635' 5640'
								5632' 5640'
	1816						800	Press Csg 800
	1827	1.3				250		Pump Acid In Perm.
-	1830	3.4	15.0			1000		15 BBLs Acid In Perm.
	1832	2.2	20.0			1000		20 " " " "
<	1835	1.8	24.5			1000		24.5 " " " " 2000 gal
	1836	3.0				1500		PSI To 1500 3 R.P.M.
	1847	1.25	47.8			1500		2000 gal Acid In Perm.
	1913	.75	75.3			1500		3150 " " " "
	1924	1.0	85			1500		All Acid In Perm. at 1500
	1934	1.0	95.2			1500		4000 gal In Perm.
								Continued on Page # 3

CUSTOMER

HALLIBURTON SERVICES JOB LOG

TICKET NO.

CUSTOMER Murphy Corp
JOB TYPE Acid

PAGE NO. 1

DATE 7-14-76

FORM 2013-R-1

CHART NO.	TIME	RATE (DPM)	VOLUME (BDL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
1								2000 gal MOD 202 Packer @ 5643' B. Plug @ 5673 Perfs (B-3) 5655-5660'
1	748	2.5		1				Fill Hole
2	801	2.0	28	1				Hole Full & Circulating
3	802	2.0				100		Start Acid, Spot to Tub Tail
4	848	2.0	32.7			100		Acid @ Tub Tail Set Packer
5	820							Pump Acid To Perfs
6	821	1.4	34			350	150	Acid @ Perfs
7	825	2.0	6.0			1250	1250	6 BBLs Acid IN Form (Comm)
8	832					300	300	Hook up To Rev out Acid (PRESS. ON FRACTIONATOR DONT WKT)
	920							Rev out Acid w/ Rig Pump All Acid Back But 200 gal
1	1233	2.1		1		150		Start Acid
2	1242	2.0	32.7	1		250		Acid @ Tub Tail Set Packer
3	1254	1.0				300		Pump Acid To Perfs
4	1257	1.0	34.0			400	400	Acid @ Perfs (Communication)
5	1304	1.1	43.0			1050	1050	St Flush, w/ 10 BBLs S. Water & 2 1/2 Gal 3 N, 9 BBLs Acid IN
6	1311	2.2	18.0			1500	1500	18 BBLs Acid IN MAX PSI 1500 Slow Rate 0.9 BPM
7								10 23 BBLs Acid IN Slow Rate
8	1320	.2	32.7			1500	1500	32.7" " " MAX PSI. Slow Rate
9	1332	.6	33.3			1500	1500	Break Down INCREASE RATE
10	1335	1.5	35.7			1500	1500	35.7 BBLs (1500 gal) Acid IN Form
11	1343	.4	43.0			1500	1500	All Acid IN Form, St. O. Flush
12	1408	3.0	53			1500	1500	10 BBLs O. Flush IN
13	1408					1450		ESIP - 1450
14	1413					1275		5 min Sim IN MAX-MAX
15	1418					1200		10 " " " PSI - RATE
16	1423					1150		15 " " " 1500 1.2
								Release Press MIN PSI. RATE
								1050 .2
								Ave - 1450 PSI, 1/10 BPM

CUSTOMER

PRODUCTION &
INJECTION DATA

55

1

1



PLUGGING &
ABANDONMENT